

Demand Reduction Attachments for Aberdeen Proving Grounds Aberdeen, Maryland



19971023 147

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Reading, Pennsylvania
June 1996**

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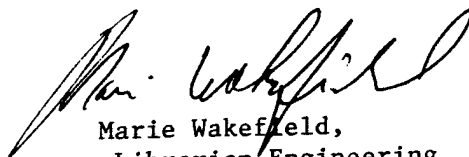


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**ABERDEEN PROVING GROUNDS
DEMAND REDUCTION ANALYSIS**

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ATTACHMENT 8.1
ELECTRIC RATES AND RIDERS

PRIMARY VOLTAGE SERVICE

SCHEDULE P

Availability: For use for all purposes, for demands of 1,500 kW or more. (Service hereunder will be continued for customers with demands of less than 1,500 kW, who originally took Schedule T service prior to February 11, 1982, but not to their successors or assigns).

Delivery Voltage: Three-phase, 13,200 Volts and over as specified by Company.

Monthly Net Rates:

Customer Charge: \$750 per month plus.

Summer
For June 1
through
September 30

Non-Summer
For October 1
through May 31

Demand Charges:Production and Transmission

For each kW of billing demand occurring during the On-Peak rating period.

\$12.09 per kW

\$5.99 per kW

Distribution

For the maximum kW of billing demand recorded during any rating period.

\$ 2.33 per kW

\$2.33 per kW

Energy Charges:

On-Peak

3.790 cents per kWh

2.257 cents per kWh

Intermediate-Peak

2.742 cents " "

2.037 cents " "

Off-Peak

1.468 cents " "

1.174 cents " "

Fuel Rate: Applies to all electricity supplied. (Rider 1)

Minimum Charge: Customer Charge plus the Demand Charges.

Transmission Service: For Customers served at 115 kV and above, the Distribution Demand Charge does not apply.

Rating Periods:Summer

On-Peak - Between the hours of 10 am and 8 pm on weekdays, excluding the National holidays listed below.

Intermediate-Peak - Between the hours of 7 am and 10 am, and the hours of 8 pm and 11 pm on weekdays excluding the National holidays listed below.

Off-Peak - All times other than those defined for the On-Peak and Intermediate-Peak rating periods.

(Continued on Next Page)

Non-Summer

On-Peak - Between the hours of 7 am and 11 am, and the hours of 5 pm and 9 pm on weekdays, excluding the National holidays listed below.

Intermediate-Peak - Between the hours of 11 am and 5 pm on weekdays, excluding the National holidays listed below.

Off-Peak - All times other than those defined for the On-Peak and Intermediate-Peak rating periods.

Holidays

All hours on Saturdays and Sundays and the following National holidays are Off-Peak: New Year's Day, President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas, and the Monday following such of these as fall on Sunday.

Billing Demand: The maximum 30-minute measured demand, adjusted to the nearest whole kW, in each applicable rating period for the month is the Billing Demand. Measured Demand is the Customer's rate of use of electric energy as shown by or computed from readings of the Company demand meter, but in no case less than 1,500 kW. (For customers with demands of less than 1,500 kW originally taking service prior to February 11, 1982, the minimum Billing Demand is 200 kW).

During the first 6 months of service under Schedule P, the Billing demand may be less than 1,500 kW but in that event is not subject to decrease. When it reaches 1,500 kW, this provision no longer applies.

Customers who participate in Rider 3 - Conservation Surcharge conservation methods may have their minimum Billing Demand set below 1,500 kW if the Surchargeable conservation methods are responsible for bringing the demand below the Schedule minimum.

Late Payment Charge: Standard. (Sec. 7.4)

Payment Terms: Standard. (Sec. 7)

Term of Contract: Five years and thereafter until terminated by at least 30 days' notice from the Customer.

Subject to Riders applicable as listed below:

1. Fuel Rate
2. Purchased Capacity Surcharge
3. Conservation Surcharge
5. Controlled Air Conditioning Service
7. Economic Development
11. Measured Demand
12. Arc Furnace Service
13. Change of Schedule
14. Emergency Generation
15. Temperature Controlled Service
16. Curtailable Service
17. Best Efforts Service
19. Demonstration and Trial Installations
21. Billing in Event of Service Interruption

16. Curtailable Service

Monthly net rates for service supplied under Schedule GL or P (the Controlling Schedule) are subject to adjustment for a Customer who agrees to the Availability conditions stated below.

Availability Conditions:

- (A) The Customer agrees to reduce demand requirements to the Contract Demand, upon advance notice of no less than 2 hours for Rate Option 1, or 15 minutes for Rate Option 2, by the Company. The Contract Demand is at least 100 kW for Rate Option 1, or at least 5000 kW for Rate Option 2, below the Customer's maximum Measured Demand. The effect of the Customer's curtailment shall be a net reduction of load on the Company's system. During periods of curtailment, the work performed by the curtailed load shall not be transferred to any other electric service provided by the Company.
- (B) The Contract Demand to which the Customer agrees to reduce demand requirements during periods of curtailment is stated separately for 1) the months of June to September, inclusive (Summer), and 2) the months of October to May, inclusive (Non-Summer). The Summer and Non-Summer Contract Demands are specified to the Company in writing by the Customer and are not increased without 2 years prior written notice, except as noted under item (C). The minimum demand reduction is applicable to both the Summer and Non-Summer periods.
- (C) The Summer and Non-Summer Contract Demands may be increased to the extent that an increase in the Customer's connected load increases the Customer's maximum Measured Demand in the respective Summer and Non-Summer periods. Notice of such an increase in Contract Demand, or any decrease, must be specified to the Company in writing at least 6 months prior to any change in the Contract Demand for billing purposes, and is subject to the Company's approval.
- (D) Service hereunder is subject to curtailment once each calendar day, at the option of the Company, but the Customer will not be curtailed more than 10 hours in one calendar day, nor more than 12 days from June 1 to May 31, inclusive. Curtailments resulting from orders or requests of Federal, State or local government are not considered as curtailment under the provisions of this Rider and will not reduce the number of annual curtailments available to the Company.
- (E) At the Customer's request, the Company furnishes, installs and maintains additional, Company-approved facilities at the meter location to permit Customer verification of compliance with the curtailment notice. The Company may contribute up to \$25 for each kW of expected load curtailment. Costs in excess of the Company's contribution are paid by the Customer.
- (F) The Initial Term of Contract for service provided under this Rider is 2 years and, thereafter, until terminated by at least 2 years written notice from either party to the other. This Rider is not available to a Customer selling capacity to the Company under the provisions of Rider 20 Electricity Purchased by the Company.

Rate Adjustment Options:

Rates and terms for a Customer receiving service under this Rider are those contained in the Controlling Schedule, except as modified below.

Option 1 (Schedules GL or P)

The monthly credit for the Summer period is determined by applying a Demand Charge Credit of \$7.87 per kW per month to the excess of the maximum Measured Demand used for Production and Transmission billing purposes for the billing month over the Customer's Summer Contract Demand. The monthly credit for the Non-Summer period is determined by applying a Demand Charge Credit of \$2.04 per kW per month to the excess of the maximum Measured Demand used for Production and Transmission billing purposes for the billing month over the Customer's Non-Summer Contract Demand.

(Continued on Next Page)

Where service is supplied under Schedule GL, the Customer Charge is increased to \$145 per month and is the Minimum Charge.

Should the Customer fail to reduce his Measured Demand during any curtailment period at least to the specified Contract Demand, the bill for service in the monthly period is computed under the applicable provisions of Schedule GL or P, except as otherwise noted below, and is subject to the net adjustment resulting from (1) the total credit for demand reduction computed in paragraph one of this option and (2) a charge applicable to each curtailment period of \$47.80 per kW applied to the excess of the maximum Measured Demand occurring during the curtailment period over the Contract Demand. Where failure to curtail to the Contract Demand occurs during the first hour curtailment, the maximum charge under item (2) is equal to the credit determined in paragraph one of this option. In the event charges are incurred under item (2), they may be reduced based upon the Customer's proportion of the number of successful compliances over the current and two prior requests by the Company for curtailment.

Option 2 (Schedule P only)

	Summer For June 1 through September 30	Non-Summer For October 1 through May 31
Demand Charges:		
<u>Production and Transmission:</u>		
For each kW of billing demand occurring during the On-Peak rating period	\$3.95 per kW	\$1.91 per kW
<u>Distribution:</u>	Standard	Standard
Energy Charges:		
Super-Peak: Energy above Contract Demand	69.903 cents per kWh	69.903 cents per kWh
Energy below Contract Demand	3.790 cents per kWh	2.257 cents per kWh
On-Peak	2.742 cents per kWh	2.037 cents per kWh
Intermediate- and Off-Peak	Standard	Standard

Super-Peak: Up to a maximum of 216 hours for an annual period beginning June 1 may be designated as Super-Peak hours. The Company will notify the Customer at least 15 minutes prior to the start of a designated Super-Peak period.

Billing Demand: Standard, except that Measured Demand occurring during an hour designated as Super-Peak will not be used for billing purposes, unless the hour is part of a period of curtailment. Measured Demand in excess of the specified Contract Demand during a period of curtailment is subject to an additional charge of \$5 per kW per hour.

(This Option is experimental and limited to 3 participants.)

Options 1 and 2

For a Customer taking service hereunder, the Company may at its option designate up to 4 weekdays per week as "demand free", but with such days subject to the curtailment provisions noted above. The designation, if any, will be made by 4 p.m. of the weekday immediately preceding the "demand free" day. In addition, the Company may at its option designate up to 4 on-peak hours as "demand free". The designation, if any, will be made by 4 p.m. on the preceding Wednesday for the five weekdays beginning Monday. The demand created by the Customer on a designated day or hour will not be used for billing purposes. The Company will not designate a day or hour as "demand free" unless 1) for that period, the anticipated average marginal energy cost during the demand billing period is less than the Energy Charge in the applicable rate schedule for the same period plus the Fuel Rate, and 2) the local distribution system has existing capacity sufficient to meet the expected load.

14. Emergency Generation

Where a Customer receiving service under Schedules GL or P has installed emergency generation and agrees to provide 100 kW or more of such generation (Contract Capacity) during specified periods in accordance with the conditions stated below, the following credits are applied to the monthly service bill:

\$7.87 during the billing months of June through September, inclusive, for each kW of Summer Contract Capacity and

\$2.04 during the billing months of October through May, inclusive, for each kW of Non-Summer Contract Capacity.

Special Provisions:

1. The Contract Capacity is the total capacity in kW to be operated by the Customer. The Customer shall specify in writing both a Summer and Non-Summer Contract Capacity. In no event shall the Non-Summer Contract Capacity exceed the Summer Contract Capacity.
2. Requests for an increase in Contract Capacity must be specified in writing at least 6 months prior to any change in the Contract Capacity for billing purposes, and is subject to the Company's approval. It may not be decreased nor contract terminated until the expiration of the Term of Contract stated below.
3. The Customer agrees to limit operation of the customer-owned generation to periods of electrical emergency on the Customer's system, normal standby generation requirements, or, as otherwise directed by the Company upon two hours advance notice.
4. The Company may call upon the Customer to operate the generation facility at the Contract Capacity once each calendar day for a maximum of 10 hours, but not more than 12 days from June 1 through May 31, inclusive.
5. In the event that the Customer fails to generate at the Contract Capacity for the full duration of any generation period directed by the Company in accordance with Item 4 above, the charge derived from the following formula is added to and becomes a part of the regular service bill. Where AG is less than $(C \times Hr)$,

$$\left(1 - \frac{AG}{(C \times Hr)} \right) \times (C \times \$47.80)$$

where AG = Actual kilowatt-hours of customer generation during periods designated by the Company for the billing month,

C = Capacity in kW contracted to be provided during periods designated by the Company, and

Hr = Number of hours (to the nearest quarter-hour) designated by the Company during the billing month for Customer generation.

In the event charges are incurred under this provision, they may be reduced based upon the Customer's proportion of the number of successful compliances over the current and two prior requests by the Company.

6. Metering equipment suitable to the Company for measuring the output of the Customer's generator shall be installed by the Company at its expense. The provisions of Section 3.9 - Parallel Operation by the Customer, Section 4 - Customer's Installation, Section 5 - Company's Installation and Section 6 - Location of Metering Equipment shall apply. The Company may contribute up to \$25 for each kW of expected emergency generation toward the costs resulting from the application of these provisions. Costs in excess of the Company's contribution are paid by the Customer.

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7. All generation from the Customer's facility shall be considered self-generation and shall represent a net reduction of load on the Company's system. In no event shall payments other than those stated herein be paid by the Company for either energy or capacity.
8. As used herein, "emergency generation" means customer-owned generation facilities which are installed and operated in accordance with Article 700 of the National Electric Code.
9. The Initial Term of Contract for service provided under this Rider is 2 years and, thereafter, until terminated by at least 2 years written notice from either party to the other.
10. This Rider is not available to a Customer selling capacity to the Company under the provisions of Rider 20 - Electricity Purchased by the Company.

ATTACHMENT 8.2
BG & E SUBSTATION REQUIREMENTS

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CUSTOMER SUBSTATION REQUIREMENTS
13.2 KV AND 33 KV PRIMARY SERVICE
METAL-ENCLOSED SERVICE ENTRANCE SWITCHGEAR

APPROVAL:

WES
12/91
12/11/93

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**CUSTOMER SUBSTATION REQUIREMENTS
13.2 kV AND 33 kV PRIMARY SERVICE
METAL-ENCLOSED SERVICE ENTRANCE SWITCHGEAR**

1. GENERAL

- 1.1 This Guide Specification describe metal-enclosed switchgear assembly for application as Customer-Owned 13.2kV or 33kV service entrance equipment for installation on the Baltimore Gas and Electric Company (BG&E) system. The entire service entrance switchgear assembly is subject to approval by BG&E.
- 1.1.1 Specific installations may require modifications to these specifications. They shall be reviewed with BG&E prior to designing the customer substation and will require acceptance by BG&E.
- 1.1.2 Contract drawings and specifications covering the customer substation installation, including the service entrance switchgear, shall be submitted to BG&E for review and approval prior to their release for contractual bidding.
- 1.2 Three sets of manufacturer's shop drawings for the entire service entrance switchgear assembly shall be submitted to BG&E for review and approval prior to fabrication of the switchgear. This review and approval may take up to six weeks and could affect the service date if complete shop drawings are not submitted to BG&E in a timely fashion.
- 1.3 The switchgear assembly shall meet all applicable requirements of ANSI, IEEE, NEMA, OSHA, NEC, and BG&E. The requirements of BG&E are in addition to and in no way a waiver of the applicable standards and codes.
- 1.4 The switchgear assembly shall consist of free-standing, self-supporting bays containing incoming cable load interrupter switches, bus tie load interrupter switches, BG&E metering equipment, and outgoing cable load interrupter switches and power fuses or electronic fuses, as applicable, with provisions for extension to future bays as shown on the drawings.
- 1.4.1 One-line diagrams of typical metal-enclosed service entrance switchgear arrangements are included in these specifications.

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2. SWITCHGEAR RATINGS

- 2.1 Minimum ratings of the switchgear assembly shall be as follows:

Rating	13.2kV Swgr.	33kV Swgr.
Nominal Voltage:	13.2 kV	33 kV
Max. Design Voltage:	15 kV	38 kV
BIL:	95 kV	150 kV
Continuous Current		
Main Bus:	600 A	600 A
Bus Taps:	600 A	600 A
Switches:	600 A	600 A
Load Interrupter Current:	600 A	600 A
Short-Circuit Interrupting		
RMS Symmetrical:	25 kA	17.5 kA
3-Phase Symmetrical at		
Rated Voltage:	500 MVA	1000 MVA
Duty Fault-Closing and Momentary		
RMS Asymmetrical:	40 kA	28 kA

- 2.2.1 The switchgear manufacturer shall furnish, upon request, certification of ratings of the basic load interrupter switch and fuse components, and/or the integrated metal-enclosed switchgear assembly consisting of the switch and fuse components mounted in the switchgear enclosure.

- 2.1.2 The switchgear manufacturer shall furnish, upon request, certification of the BIL rating established by test to insure that clearances between bare live parts and between such parts and adjacent grounded surfaces are adequate for the required BIL rating of the switchgear assembly.

3. SWITCH AND FUSE EQUIPMENT

- 3.1 Load interrupter switches shall be three-pole, group operated. Manually operated switches shall be equipped with an externally operable handle. Switch handles shall be nonremovable and equipped with padlocking facilities in either open or closed position. Power operated switches shall be equipped with electric motor operators compatible with the load interrupter switch.

- 3.2 Load interrupter switches shall be equipped with a quick-make, quick-break device to insure high-speed closing and opening of the switch independent of the speed of the operating handle.

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- 3.3 Incoming supply feeder load interrupter switches shall be installed to receive the BG&E incoming cable on the hinged end at the bottom of the switch, with the jaw end of the switch at the top connected to the main bus.
- 3.3.1 Incoming feeder cable terminations will be furnished and installed by BG&E.
- 3.4 Where two or more BG&E supply feeders are installed, the associated incoming load interrupter switches shall be equipped with key interlocks and electrical interlocks (if switches are power operated) to prevent paralleling the supply feeders. (Additional requirements for electrically interlocked switches are specified under Automatic Transfer Operation, if applicable).
- 3.5 Load interrupter switches shall meet the requirements of BG&E for load interrupter switches used on 13.2kV or 33kV metal-enclosed switchgear installations.
- 3.5.1 Load interrupter switches currently approved by BG&E for metal-enclosed service entrance switchgear application are:
- S&C Electric Company - "Mini-Rupter" or "Alduti-Rupter"
Powercon Corporation - "PIF"
Square D Company - "HVL"
Westinghouse Corporation - "WLI" or "WFS"
Brown Boveri-ITE - "HPL-C"
- 3.5.2 Other load interrupter switches will be considered subject to factory and/or field inspections, certified test data and drawing review and approval by BG&E prior to awarding an order to a manufacturer.
- 3.6 Power fuses shall be of the solid-material expulsion type utilizing refill-unit-holder or fuse-unit-end-fitting construction. Fuse holders shall be equipped with snufflers or condensers.
- 3.7 Electronic fuses shall utilize an expendable interrupting module and a reusable control module. The interrupting module shall consist of a main current section and a fault-interrupting section. These sections shall be arranged and contained in the same housing.

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- 3.8 Mounting for power and electronic fuses shall be 45° disconnect type. Adequate clearance, as if fuses were energized, shall be maintained through the entire arc traveled by the fuse to its open position.
- 3.9 Power fuses and electronic fuses shall meet the requirements of BG&E for use on 13.2kV or 33kV metal-enclosed switchgear installations. Ampere ratings and time-current characteristics of the power fuse units and/or electronic fuses shall be specified and/or approved by BG&E for each application.
- 3.9.1 Power fuses and electronic fuses currently approved by BG&E for metal-enclosed service entrance switchgear application are:
- (a) Power Fuses:
S&C Electric Company - "SM-5S" or "SMU-40"
Westinghouse Corporation - "RBA-400"
 - (b) Electronic Fuses:
S&C Electric Company - "Fault Fiter"
- 3.10 Interphase and end barriers in the switchgear shall extend approximately 5" beyond the energized parts of the interrupting switch and fuse equipment. Barriers shall be sturdily mounted to prevent misalignment or incidental contact with any energized part.
- 3.11 Adequate fuse handling tools for the power fuses and/or electronic fuses shall be provided with the switchgear.
- 3.12 Spare fusing equipment shall be provided as follows:
- (a) Power Fuses: Three spare fuse holders with snufflers or condensers, and six spare fuse refill units for each size.
 - (b) Electronic Fuses: Six spare interrupting modules of the proper rating.

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4. MAIN AND GROUND BUSES

- 4.1 The main bus, bus taps and ground bus in the switchgear shall be aluminum or copper and shall be constructed and braced as to withstand the short circuit stresses associated with the interrupting rating of the switchgear.
- 4.2 Each bus bar connection in the switchgear shall be made up with at least two bolts not less than 3/8" diameter or one bolt not less than 1/2" diameter. Minimum phase-to-phase and phase-to-ground clearances of energized busses shall be determined by the BIL rating of the equipment. All bus taps and joints shall be plated.
- 4.3 All power and ground cable connections to the main bus and ground bus in the switchgear shall be made with two-bolt compression type connectors.
- 4.4 The switchgear assembly shall be equipped with provisions for extension of the main bus and the ground bus to future switchgear bays, as applicable.
- 4.5 Grounding devices approved by BG&E for the attachments of portable grounding equipment shall be provided as follows:
- (a) On the line side of each incoming load interrupter switch.
 - (b) On the load side of the 13.2kV outgoing fuses, or on both sides of the 33kV outgoing fuses.
 - (c) On both sides of the BG&E metering current transformer bus connections.
 - (d) On the line side of the BG&E 13.2kV metering potential transformers, or on both sides of the BG&E 33kV metering potential transformer fuses.
 - (e) On the ground bus in front of each switchgear bay and compartment in the switchgear assembly.
- 4.5.1 Details of grounding devices acceptable by BG&E are included in these specifications. Alternate designs will be considered subject to approval by BG&E prior to fabrication and certified by test to withstand the minimum momentary RMS asymmetrical rating of the switchgear.

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5. SWITCHGEAR ENCLOSURE

- 5.1 The switchgear assembly shall be integrally designed and compatible with the manufacturer of the basic switching components. Construction shall be in accordance with the minimum construction specifications of the fuse manufacturer, providing adequate space for fuse handling and venting and with sufficient rigidity and holding strength of enclosure, doors, windows, etc., for fuse exhaust.
- 5.2 Switchgear enclosure shall be fabricated from 11 gauge steel minimum and shall meet construction specifications for enclosures containing expulsion type power fuses. Each switchgear bay shall be a self-supporting unit enclosure, with full side walls to minimize the number of bolts required to join adjacent units during installation.
- 5.3 Switchgear bays shall be bolted together to form a complete assembly. The switchgear assembly shall be bolted to the concrete foundation pad using the anchor bolt recommendations outlined by the switchgear manufacturer. Units shall be arranged so that all connections shall be readily accessible.
- 5.4 Doors shall be fabricated from 11 gauge steel minimum, with concealed hinges and foot operated door holders. Door handles shall have provisions for padlocking. Inspection windows of adequate size shall be provided in the door of each load interrupting switch so that the open and closed positions can be readily observed from the outside of the switchgear.
- 5.5 Each switchgear bay and compartment in the switchgear assembly housing high voltage components shall be provided with a protective hinged screen barrier bolted closed with captive levers or other acceptable latching devices to prevent inadvertent physical contact with any energized part when the enclosure door is open.

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5.5.1 Screen barriers in front of the load interrupter switches shall be equipped with signs warning that "Switch Blades May Be Energized In Any Position". Screen barriers in front of power fuses or electronic fuses shall be equipped with signs warning that "Fuses May Be Energized In Any Position". These warning signs are in addition to any other high voltage warning signs provided on the external and/or interior doors or barriers.

5.6 Key or mechanical interlocks shall be provided to prevent opening the door of the outgoing cable fuse compartment units unless the associated load interrupter switch is in open position or closing of the switch if the door is open. Protective covers shall be provided over all key interlocks to protect keys from weather and from breaking.

5.6.1 Except where power operated switches are provided in the incoming feeder units, mechanical interlocks shall not be provided in these units. It shall be possible to open the door of the incoming load interrupter switch units with the switch in either position for inspection and testing by BG&E operating personnel.

5.7 Removable brackets shall be provided in each incoming supply feeder load interrupter switch unit for the installation of three 10 kV duty cycle, 8.4 kV MCOV, or 27 kV duty cycle, 22.0 kV MCOV, heavy duty, metal oxide distribution class surge arresters by BG&E.

5.7.1 Details of the BG&E surge arresters and incoming feeder cable terminations are included in this specification.

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5.8 Each switchgear bay shall be equipped with screened ventilation louvers as required.

5.9 For outdoor installations, the entire switchgear assembly shall be of outdoor construction and all doors and joints between bays shall be gasketed with suitable material to prevent moisture from entering the enclosure. Louvers on each unit shall be equipped with inside screens and baffle plates to guard against the entrance of insects, water, etc. The cylinder locks of the key interlock system shall be equipped with protective covers.

5.9.1 Outdoor switchgear units shall be equipped with heaters to maintain air circulation and prevent condensation inside the enclosures. Heaters shall be wired to one main fused safety switch or circuit breaker located in a steel enclosed compartment in the front of an incoming unit. An access cover shall be provided to allow operation of the heater switch while the switchgear is energized. Heaters shall be equipped with guards providing both thermal and electric shock protection to personnel. Heater wiring must be of the type capable of withstanding the high temperature environment in the proximity of the heaters.

5.9.2 For outdoor fenceless installations, the switchgear shall be of vandalproof construction capable of providing protection against contact with enclosed equipment that would be subject to deliberate unauthorized acts by members of the unsupervised general public. Switchgear shall be equipped with padlockable anti-vandalism steel covers over all switch operating handles, key interlock devices and viewing windows.

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6. BG&E METERING

- 6.1 The switchgear metering units shall contain provisions for mounting the BG&E metering current and potential transformers, and potential transformer fuses, including all necessary drilling and bolting hardware.
- 6.2 The metering current transformers, potential transformers, and potential transformer fuses will be furnished and installed by BG&E. The quantity, rating, make and type of the metering transformers and fuses will be specified by BG&E for each application.
- 6.3 All primary connections from the switchgear bus to the current transformer terminals, from the switchgear bus to the potential transformer fuses, and from the fuses to the potential transformer terminals shall be provided by the switchgear manufacturer.
- 6.4 Primary connections between the switchgear bus and the current transformer terminals shall have the same current rating as the main switchgear bus.
- 6.5 Grounding devices on both sides of the current transformer bus connections shall be readily accessible and securely attached to the switchgear bus so as not to interfere with nor have to be removed during the installation, removal, or replacement of the metering current transformers.
- 6.6 Grounding devices on the primary leads to the potential transformers shall be readily accessible and securely attached to bus support insulators so as not to interfere with the installation, removal, or replacement of the metering potential transformers.
- 6.7 All primary cable connections shall be made with two-bolt compression type connectors.

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- 6.8 All secondary wiring from the metering current and potential transformers shall be provided by the switchgear manufacturer. Wiring shall be extended & connected to a single 12-point terminal block in each metering unit.
- 6.9 The terminal block shall be Marathon No. 6000DJ, Westinghouse No. 542247, Buchanan No. B-112, or equal approved by BG&E. The terminal block shall be located within the metering unit, at either top front or bottom front of the compartment, depending on the remote meter cabinet conduit entrance.
- 6.10 Secondary wiring shall be type SIS or approved equal, stranded, insulated switchboard wire of #14 gage or larger. Wires shall be equipped with ring tongue type terminals at each end. Wiring shall be installed in metal conduit or where shielded wires are used, they shall be bundled and appropriately supported on the compartment walls. Insulating bushings are to be provided when wiring between adjacent compartments or through barriers and partitions.
- 6.11 A 2-inch conduit shall be provided from each metering unit in the switchgear to the location of the remote meter cabinets in accordance with Section 8 of this specification.
- 6.12 The switchgear drawings shall show the location where the customer shall terminate the 2-inch conduit at each metering unit in the switchgear.
- 6.13 Secondary wiring from the terminal block in the switchgear metering units to the remotely located meter cabinets will be furnished and installed by BG&E.
- 6.14 A telephone circuit for remote metering shall be provided in accordance with Section 8 of this specification.

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- 6.15 Details of the BG&E meter cabinet, termination of the conduits and grounding provisions are included with these specifications.
- 6.16 Additional metering unit requirements for 13.2 kv service entrance switchgear are as follows:
- 6.16.1 A completely isolated compartment shall be provided in each metering unit for the installation of three metering current transformers similar to GE "JKM-110". Metering current transformers will be furnished and installed by BG&E.
- 6.16.2 A completely isolated compartment shall be provided in each metering unit for the installation of three metering potential transformers similar to GE "JVM-5". Metering potential transformers will be furnished and installed by BG&E.
- 6.16.3 The compartments shall be arranged to allow for the easy access, installation, removal, or replacement of the metering transformers after the metering unit is installed as an integral part of the switchgear assembly.
- 6.16.4 Separate hinged steel panels for access to the current and potential transformer compartments shall be provided, secured by captive fasteners and equipped with padlocking provisions. The padlocking feature may be omitted if the current and potential transformer compartments are located behind a padlockable door.
- 6.16.5 The switchgear ground bus shall be extended and mounted in the front of each compartment. A grounding device for the attachment of portable grounding leads shall be provided on the ground bus in each compartment.
- 6.16.6 A drawout carriage complete with fuse clips mounted on insulators shall be provided in a completely isolated compartment to accommodate three potential transformer fuses. Potential transformer fuses will be furnished and installed by BG&E.
- 6.16.7 Fuse clips shall be mounted on 11-1/2" centers to accommodate current limiting fuses having 1-9/16" diameter ferrules, similar to GE "EJ-1", Size "B", 15.5kV, 0.5E amp.

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- 6.16.8 When fuses in the drawout carriage are mounted horizontally, they shall not be more than 5' above finished floor line. On vertical mountings, top fuse clips must not be more than 6' above finished floor line.
- 6.16.9 All current carrying contacts of the drawout carriage assembly shall be silver-plated with adequate electrical conductivity.
- 6.16.10 Before the potential fuses become accessible for checking or replacement, the drawout carriage shall allow for easy visibility to assure all contacts are disconnected and electrically grounded. Details of design and arrangement of grounding method shall be approved by BG&E prior to fabrication.
- 6.16.11 The switchgear manufacturer shall furnish and install all high voltage connections from the bus to the potential transformer fuse drawout assembly. All potential high voltage connections to the bus must be on the supply side of the metering current transformers.
- 6.16.12 In both the fully withdrawn position and fully closed position, the drawout carriage shall lock. The drawout carriage assembly shall be designed to allow for the easy access, installation, removal, or replacement of the fuses with the carriage in the fully withdrawn and locked position.
- 6.16.13 The front of the drawout carriage shall be provided with padlocking facilities. The padlocking facilities may be omitted if the drawout carriage assembly is located behind a padlockable door.
- 6.16.14 A typical arrangement of a 13.2kV metering unit is included in these specifications.

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- 6.17 Additional metering unit requirements for 33 kV Service Entrance Switchgear are as follows:
- 6.17.1 The metering unit shall be arranged for the installation of three metering current transformers similar to GE "JKW-7", and three metering potential transformers similar to GE "JWV-7". Metering transformers will be furnished and installed by BG&E.
- 6.17.2 The unit shall be arranged to allow for easy access, installation, removal or replacement of the metering transformers after the metering unit is installed as an integral part of the switchgear assembly.
- 6.17.3 Facilities for the installation of three potential transformer fuses shall be provided complete with fuse clips mounted on insulators. Potential transformer fuses will be furnished and installed by BG&E.
- 6.17.4 Fuse clips shall be mounted on 27" centers to accommodate current limiting fuses having 3" diameter ferrules, similar to GE "EJO-1", Size "D", 38kV, 2.0E amp.
- 6.17.5 Fuse mountings shall be arranged to allow for the easy access, installation, removal, or replacement of the fuses with the switchgear de-energized and both sides of the fuses grounded.

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6.17.6 Grounding devices on both sides of the potential transformer fuses shall be readily accessible and securely attached to bus support insulators so as not to interfere with the installation, removal, or replacement of the potential transformer fuses.

6.17.7 The switchgear ground bus in front of the metering unit shall be equipped with a grounding device for the attachment of portable grounding leads.

6.17.8 The door of the metering unit shall be full length, with concealed hinges and foot operated door holder. Door handle shall have provisions for padlocking.

6.17.9 A full length protective hinged screen barrier bolted closed with captive levers or other acceptable latching device shall be provided to prevent inadvertent physical contact with any energized part when the enclosure door is open.

6.17.10 A typical arrangement of a 33kV metering unit is included in these specifications.

7. AUTOMATIC TRANSFER OPERATION (IF APPLICABLE)

7.1 Two-Feeder NORMAL-ALTERNATE Supply System (If Applicable)

7.1.1 The two motor-operated main switches on the incoming feeders shall operate in an automatic transfer system. Either incoming feeder can be selected as the normal incoming feeder or alternate incoming feeder as directed by BG&E. Necessary equipment shall be included and properly wired to accomplish the following automatic operations and control features:

1. Normal voltage on both incoming feeders.

- a. Main switch on normal incoming feeder closed.
- b. Main switch on alternate incoming feeder open.

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2. Normal voltage on alternate incoming feeder and loss of voltage on the normal incoming feeder.
 - a. Main switch on the incoming feeder on which there has been Loss of voltage shall open after a predetermined time delay.
 - b. Main switch on the other incoming feeder shall close immediately thereafter.
3. Loss of voltage on normal incoming feeder and voltage not normal on the alternate incoming feeder.
 - a. Main switch on the incoming feeder on which there has been loss of voltage shall not open, and the other main switch shall not close.
 - b. Should voltage become normal on the feeder to which load could have been transferred, then the transfer operation shall be in accordance with Paragraph 2, above.
4. Loss and restoration of voltage on both incoming feeders simultaneously.
 - a. Main switch closed shall not open, and main switch open shall not close.
5. Following restoration of normal voltage on incoming feeder from which load has been transferred and subsequent loss of voltage on the other incoming feeder.
 - a. Main switch on the feeder on which there has been loss of voltage shall open after a predetermined time delay.
 - b. Main switch on the feeder which is available for service shall close immediately thereafter.
6. Overcurrent blocking shall be provided to prevent an automatic operation under a fault condition.
7. Following an automatic transfer operation and subsequent restoration of voltage on the incoming feeder from which the load has been transferred, retransfer to normal operation shall be done manually as described below and not by automatic operation of the control equipment.

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8. A selector switch for manual or automatic operation shall be provided. In the automatic position the transfer operation shall be as described above. In the manual position all automatic operation shall be nullified. Manual open transition retransfer to normal shall be possible with the selector switch in the manual position by opening the main switch on the alternate incoming feeder first and then closing the normal incoming feeder main switch.
9. An electrical interlock shall be provided to prevent paralleling the two incoming feeders. The interlock shall be effective with the selector switch in either the manual or automatic position.
10. A key-operated permissive switch shall be provided to allow BG&E personnel to by-pass the electrical interlock and manually parallel the two incoming feeders for closed transition switching under control conditions. The key-operated switch shall be effective with the selector switch in the manual position only. The key shall be removable with the switch in the normal position only and captive in the by-pass position.
11. Undervoltage detection for initiation of automatic transfer shall be provided on each incoming phase by one of the following:
 - a. Capacitively coupled voltage sensors of constant-current output that do not require primary fuses.
 - b. Fused potential transformers mounted on a drawout carriage which in the withdrawn position will allow the primary side of the potential transformer fuses to be visible disconnected and grounded, and the potential transformer secondary wiring visible disconnected.
12. A timer shall be provided to allow adjustable time delay from 0 to 10 seconds between loss of voltage and initiation of automatic transfer.
13. Pushbutton test switches shall be provided to simulate loss of voltage on either incoming feeder for testing the automatic transfer operation.

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14. Push-to-test source-voltage indicating lamps shall be provided to indicate presence of voltage on each incoming feeder.
15. Operational power for the motorized switches shall be provided by one of the following:
- a. Battery and charger system of adequate capacity.
 - b. Fused potential transformers mounted on a drawout carriage as indicated in Paragraph 11.b above.
16. A push-to-test indicating lamp shall be provided to indicate that all switch operators are coupled to their respective switches and are in the correct positions, that all doors providing access to switches are closed and latched, that the key-operated permissive switch is in the normal position with the key removed, that the selector switch is in the automatic position, and that all control circuits are properly connected for automatic transfer.

7.1.2 Complete control wiring diagram drawings for the automatic transfer system, including complete operating instructions and test procedure, shall be submitted to BG&E for review and approval prior to fabrication of the switchgear.

7.1.3 If fused potential transformers are provided for under voltage detection or operational power as indicated above, complete detail drawings for the drawout carriage assembly showing disconnecting and grounding provisions shall be included with the drawings submitted to BG&E for review and approval prior to fabrication of the switchgear.

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7.2 Two-Feeder SPLIT-BUS Supply System (If Applicable).

7.2.1 The two motor-operated main switches on the incoming feeders and the motor-operated bus tie switch shall operate in an automatic transfer system. Necessary equipment shall be included and properly wired to accomplish the following automatic operations and control features:

1. Normal voltage on both incoming feeders.
 - a. Both main switches closed.
 - b. Bus tie switch open.
2. Normal voltage on one incoming feeder and loss of voltage on the other incoming feeder.
 - a. Main switch on the incoming feeder on which there has been loss of voltage shall open after a predetermined time delay.
 - b. Bus tie switch shall close immediately thereafter.
3. Loss of voltage on one incoming feeder and voltage not normal on the other incoming feeder.
 - a. Main switch on the incoming feeder on which there has been loss of voltage shall not open, and the bus tie switch shall not close.
 - b. Should voltage become normal on the feeder to which load could have been transferred, then the transfer operation shall be in accordance with Paragraph 2, above.
4. Loss and restoration of voltage on both incoming feeders simultaneously.
 - a. Main switches on the incoming feeders shall not open, and bus tie switch shall not close.

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5. Following restoration of normal voltage on incoming feeder from which load has been transferred and subsequent loss of voltage on the other incoming feeder.
 - a. Main switch on the feeder on which there has been loss of voltage shall open after a predetermined time delay.
 - b. Main switch on the feeder which is available for service shall close immediately thereafter, while the bus tie switch remains closed.
6. Over-current blocking shall be provided to prevent an automatic operation under a fault condition.
7. Following an automatic transfer operation and subsequent restoration of voltage on the incoming feeder from which the load had been transferred, retransfer to normal operation shall be done manually as described below and not by automatic operation of the control equipment.
8. A selector switch for manual or automatic operation shall be provided. In the automatic position the transfer operation shall be as described above. In the manual position all automatic operation shall be nullified. Manual open transition retransfer to normal shall be possible with the selector switch in the manual position by opening the bus tie switch first and then closing the incoming feeder main switch.
9. An electrical interlock shall be provided to prevent paralleling the two incoming feeders. The interlock shall be effective with the selector switch in either the manual or automatic position.
10. A key-operated permissive switch shall be provided to allow BG&E personnel to by-pass the electrical interlock and manually parallel the two incoming feeders for closed transition switching under control conditions. The key-operated switch shall be effective with the selector switch in the manual position only. The key shall be removable with the switch in the normal position only and captive in the by-pass position.

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11. Undervoltage detection for initiation of automatic transfer shall be provided on each incoming phase by one of the following:
 - a. Capacitively coupled voltage sensors of constant-current output that do not require primary fuses.
 - b. Fused potential transformers mounted on a drawout carriage which in the withdrawn position will allow the primary side of the potential transformer fuses to be visible disconnected and grounded, and the potential transformer secondary wiring visible disconnected.
12. A timer shall be provided to allow adjustable time delay from 0 to 10 seconds between loss of voltage and initiation of automatic transfer.
13. Pushbutton test switches shall be provided to simulate loss of voltage on either incoming feeder for testing the automatic transfer operation.
14. Push-to-test source-voltage indicating lamps shall be provided to indicate presence of voltage on each incoming feeder.
15. Operational power for the motorized switches shall be provided by one of the following:
 - a. Battery and charger system of adequate capacity.
 - b. Fused potential transformers mounted on a drawout carriage as indicated in Paragraph 11.b above.
16. A push-to-test indicating lamp shall be provided to indicate that all switch operators are coupled to their respective switches and are in the correct positions, that all doors providing access to switches are closed and latched, that the key-operated permissive switch is in the normal position with the key removed, that the selector switch is in the normal position with the key removed, that the selector switch is in the automatic position, and that all control circuits are properly connected for automatic transfer.

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7.2.2 Complete control wiring diagram drawings for the automatic transfer system, including complete operating instructions and test procedure, shall be submitted to BG&E for review and approval prior to fabrication of the switchgear.

7.2.3 If fused potential transformers are provided for under voltage detection or operational power as indicated above, complete detail drawings for the drawout carriage assembly showing disconnecting and grounding provisions shall be included with the drawings submitted to BG&E for review and approval prior to fabrication of the switchgear.

8. MISCELLANEOUS INFORMATION

8.1 Substation Transformers

8.1.1 The primary windings shall be rated 13,200 volts or 33,000 volts, with two 2-1/2% full capacity taps above and below the nominal rating.

8.1.2 The minimum BIL rating of the transformers shall be 95kV for 13.2kV supply, or 150kV for 33kV supply.

8.1.3 Minimum impedances of the transformers shall be 4% at 13.2kV, or 5% at 33kV.

8.2 Substation Grounding System

8.2.1 A driven ground rod system consisting of copper-clad steel or stainless steel ground rods shall be installed in the substation area. The ground rods shall be interconnected with 4/0 bare copper or copper-clad wire and shall have a measured ground resistance of not more than 5 ohms.

8.2.2 All noncurrent carrying metal parts of the substation shall be connected to the ground system. The switchgear ground bus shall be connected at a minimum of two places to the ground system with 4/0 bare copper wire. A 1/0 bare copper wire shall be extended from the ground system to the location of the BG&E meter cabinet, with 3 feet of free length for grounding the cabinet.

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8.2.3 Exothermic joints shall be used for all connections below grade. Double-bolted compression type connectors shall be used for above grade ground connections to equipment ground bus.

8.2.4 When a substation fence is specified, it shall be connected to the ground grid system of the substation. A 1/0 bare stranded copper or equivalent copper weld shall be located 2'-6" outside the fence, buried 12" below grade. Every other fence post shall be connected to the ground system and the gates shall be equipped with a flexible ground strap at the hinged sides. The fence shall be 8' high minimum made of 7' metal fabric and topped by a 1' height of barbed wire. A 3'-0" personnel gate shall be provided and shall be equipped with double padlocking facilities. High voltage warning signs shall be provided on the access gates and on all sides of the fence enclosure.

8.2.5 Typical substation grounding grid details are included in these specifications.

8.3 All work shall conform with the rules, regulations, and requirements of all applicable codes and BG&E.

8.4 The substation shall be tested in accordance with Inspections and Tests Prior to Energizing Metal-Enclosed Service Entrance Switchgear included in these specifications. A copy of the test report shall be submitted to BG&E before the substation will be energized.

8.5 Rigid non-metallic 6" conduits shall be provided for the incoming and outgoing feeders from the switchgear. The 90° elbows to terminate the conduits in the switchgear units shall have a minimum bending radius of 48" unless otherwise approved by BG&E.

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- 8.6 An empty 2" conduit shall be provided from each metering unit in the switchgear to the location of the meter cabinets. Conduits shall be rigid metal, rigid non-metallic, or electrical metallic tubing, as permitted by the National Electrical Code for the specific customer installation. Conduits shall be terminated 6" above the floor and 6" from the wall at the meter cabinet locations. Meter cabinets will be furnished and installed by BG&E. Meter cabinets will be 36"W x 60"H x 13"D. The location of the meter cabinets shall be shown on the contract drawings and shall be readily accessible and as close as possible to the switchgear metering unit. A minimum 5' of clearance is required in front of the meter cabinets. The quantity and location of the meter cabinets shall be specified and approved by BG&E for each installation.
- 8.7 A 4/C (two twisted pair) telephone cable in a 3/4" conduit shall be extended from the customer telephone system to the BG&E meter cabinet. The cable shall be #24 AWG solid copper, UL type CMP, with fluorinated ethylene propylene insulation, or better if required by the National Electrical Code. Pairs shall be twisted with five twists every 12". The customer shall supply BG&E with a telephone number capable of being called at any time for remote metering by BG&E.
- 8.7.1 Details of the meter cabinet and its installation are included in these specifications.
- 8.8 A minimum aisle of 6'-0" shall be provided in front of the switchgear.
- 8.9 A separate metal cabinet equipped with a padlockable hinged cover shall be provided to house the fuse handling tools and spare fusing equipment.
- 8.10 Master keyed padlocks shall be provided for the substation access door, all load interrupter switch operating handles and doors of all switchgear units. One key shall be located in a padlockable metal keybox. This keybox shall be mounted outside the substation, adjacent to the access door, and shall have a hinged cover with suitable provisions for padlocking by BG&E.

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8.11 In the event that the substation is located adjacent to road-ways, loading docks, parking areas or any area susceptible to damage from vehicular traffic, pipe guards or barriers shall be installed around the substation area to protect the fence and/or electrical equipment.

8.12 Pipes and duct systems foreign to the electrical installation shall not enter or pass through the switchgear room.

8.13 A concrete pad shall be provided to adequately support the service entrance switchgear. Where applicable, the fenced area in outdoor substations shall be filled with 3/4" crushed stone to a depth of 4". The top of the stone shall be approximately level with the top of the concrete pad supporting the switchgear.

9. INSPECTION AND TEST REQUIREMENTS PRIOR TO ENERGISING METAL-ENCLOSED SERVICE ENTRANCE SWITCHGEAR

9.1 Certificate of Electrical Inspection

9.1.1 A certificate of electrical inspection covering all new main substations and reconnection of a modified or relocated existing main substation shall be obtained from the proper Code enforcing authority and a copy forwarded to BG&E before such equipment may be energized. On government projects, a letter covering approval of the installation, signed by the duly authorized government agent and forwarded to BG&E is acceptable in lieu of the certificate. The other exceptions to the certificate requirement are those specified by National Electric Code.

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9.2.1 An electrical testing service company will make applicable field inspections and tests as listed below. Before the equipment is energized, a written report of the field inspection and tests shall be forwarded to BG&E. These inspections and tests must be made as near as possible to the scheduled service date. Appropriate tests are to be applied to the low voltage windings of transformers and associated equipment. The Customer must also perform the following:

1. The Customer shall deliver (if applicable) at least 15 days prior to service, the drawout elements of protective relays for blocking the automatic transfer operation of main incoming feeders to BG&E. BG&E will reinstall the protective relay drawout elements prior to energizing the Customer Substation as outlined below. Cases for drawout type relays and non-drawout type relays are not to be delivered to BG&E.
2. Inspect all high voltage equipment, wiring and connections to assure that none of the customer substation equipment or connections are faulty prior to the application of high voltage tests.
3. Make complete inspection of all load interrupter switches and check adjustments of contacts, operating mechanism, and other items as specified per manufacturers instructions.

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REVISED:
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SHEET 27

4. On all outgoing feeders equipped with power or electronic fuses, verify the ampere rating and time-current characteristic of the fuse units. Record of the ampere rating, time-current characteristic, type and make of all power or electronic fuses must be included in the written report to BG&E.
5. Measure the ground resistance of the substation ground system. The resistance shall not exceed 5 ohms. Record of the measured ground resistance shall be included in the written report to be forwarded to BG&E.
6. Measure insulation resistance of all transformer windings, interrupter switches, buses, etc. These measurements must be made before the external connections are completed to the high voltage and low voltage transformer bushings.
7. Make dielectric tests on insulating liquid samples from all transformers, etc.
8. Verify transformer ratios on all tap positions. Also set transformer tap changers on tap position selected to give desired secondary operating voltage.
9. Apply high voltage tests on all new high voltage equipment and wiring, consisting of the application of 75% of the original factory test for one minute as specified in ANSI and IEEE standards. Where used or rebuilt equipment is used, the test voltage may be restricted by the manufacturer to 65% or even less of the original factory test depending upon its age and conditions. Tests on high voltage cables shall be made in accordance with the latest requirements of AEIC, IPCEA, or as specified by the manufacturer.

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10. Make voltage build-up tests on all equipment and wiring with a voltage sufficient to determine that no short circuits exist.
 11. Apply high-voltage phase-out tests on all high voltage circuits which can be connected in parallel during switching operations and also on duplicate supply circuits having switching equipment equipped with key or electrical interlocks to prevent parallel operation. Also apply low voltage phase-out tests to low voltage buses and/or low voltage feeders equipped with electrical or key interlocks to prevent parallel operation.
 12. Test the automatic transfer facilities on main high voltage circuits and/or transformer low voltage circuits to assure satisfactory operation.
 13. Where control transformers are provided on the incoming line circuits, test the automatic changeover contactor, which makes control voltage available from either of the control transformers, to assure satisfactory operation.
 14. Verify satisfactory operation of all interlocking systems provided to prevent paralleling supply circuits and/or paralleling with on site generation. Also verify satisfactory operation of all interlocking systems provided for safety to operating personnel.
- 9.3 Inspections and Tests to be Performed by BG&E Without Charge to the Customer
- 9.3.1 In substations where two or more incoming supply feeders are installed, BG&E will make live high voltage phase-out tests between the incoming feeders.

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9.3.2 In substations where the main incoming load interrupter switches are equipped with automatic transfer facilities, BG&E will perform the following functions (if applicable):

1. Inspect, test and set drawout element of protective blocking relays previously delivered to BG&E in accordance with 9.2 above.
2. Deliver and install protective blocking relay drawout elements in the Customer switchgear.
3. Non-drawout protective blocking relays will be inspected and set at the Customer switchgear.
4. Wire check control wiring from the blocking current transformers to the protective blocking relays and to the lockout relays.

Note: BG&E will bring to the attention of the Customer any problems found in the protective blocking and lock-out relaying control wiring for correction by the Customer. After wiring problems have been resolved, BG&E will complete these wiring checks.

5. Verify satisfactory operation of the automatic transfer operation and protective blocking feature.

Note: Approved elementary diagram and associated control wiring diagrams of the power operated switches and protective blocking relaying, including automatic transfer system, shall be furnished to BG&E at least 15 days prior to service date. The service date will be determined by the Customer schedule and coordinated with BG&E.

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GENERAL SPECIFICATION

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10. TYPICAL SWITCHGEAR ARRANGEMENTS AND DETAILS

- 10.1 The following figures represent various typical arrangements of metal-enclosed service entrance switchgear, and its corresponding BG&E metering and grounding requirements.

Figure 1 - Single Source Supply
Figure 2 - Two Sources - Normal & Alternate Supply
Figure 3 - Two Sources - Split Bus Supply
Figure 4 - BG&E Metering Units
Figure 5 - Grounding Bails
Figure 6 - BG&E Meter Cabinet
Figure 7 - BG&E Surge Arresters
Figure 8 - Substation Grounding

- 10.2 Specific installations may require modifications to these typical arrangements. They shall be reviewed with BG&E prior to designing the customer substation and will require acceptance by BG&E.
- 10.3 Summary of customer substation documents requiring approval by BG&E as indicated in this specification.

1. Contract drawings and specifications covering the customer substation installation, including the service entrance switchgear equipment, incoming cable conduits, BG&E meter cabinets and conduits, telephone circuit for remote BG&E metering, substation transformers, grounding facilities, and inspection and test requirements.
2. Manufacturing shop drawings for the entire service entrance switchgear assembly, including grounding details of any drawout carriage furnished, BG&E metering units, grounding bails and battery and charger equipment if provided.
3. Certified report of the inspections and tests required prior to energizing the service entrance switchgear.

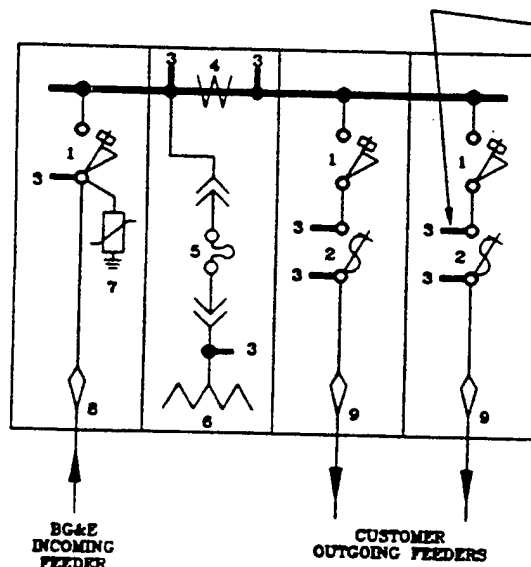
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 SYSTEM ENGINEERING
 GENERAL SPECIFICATION

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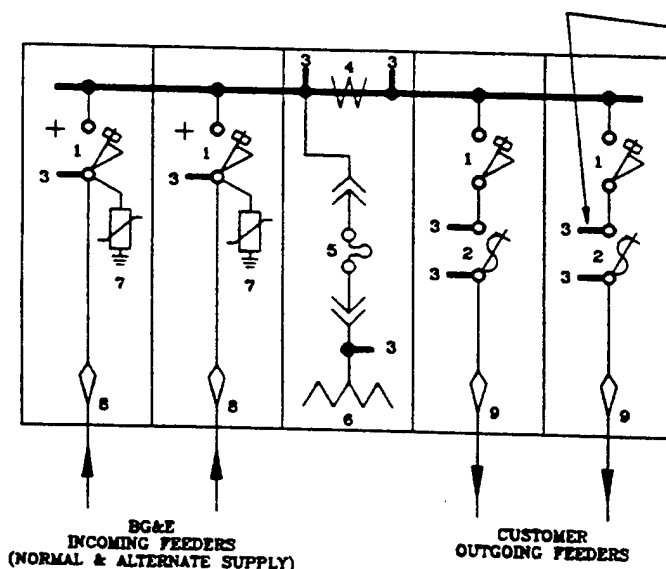


NOTE:
 ADDITIONAL GROUND BAIL ON 33kV
 SWITCHGEAR ONLY.

(SEE SHEET 32, FIGURE 3 FOR LEGEND.)

SINGLE BG&E FEEDER

FIGURE 1



NOTE:
 ADDITIONAL GROUND BAIL ON 33kV
 SWITCHGEAR ONLY.

+ KEY INTERLOCKS TO PREVENT PARALLELING INCOMING FEEDERS.

TYPICAL ARRANGEMENT ALSO APPLICABLE TO POWER OPERATED SWITCHES
 EQUIPPED WITH AUTOMATIC TRANSFER OPERATION.

(SEE SHEET 32, FIGURE 3 FOR LEGEND.)

TWO BG&E FEEDERS - SINGLE BUS SWGR.

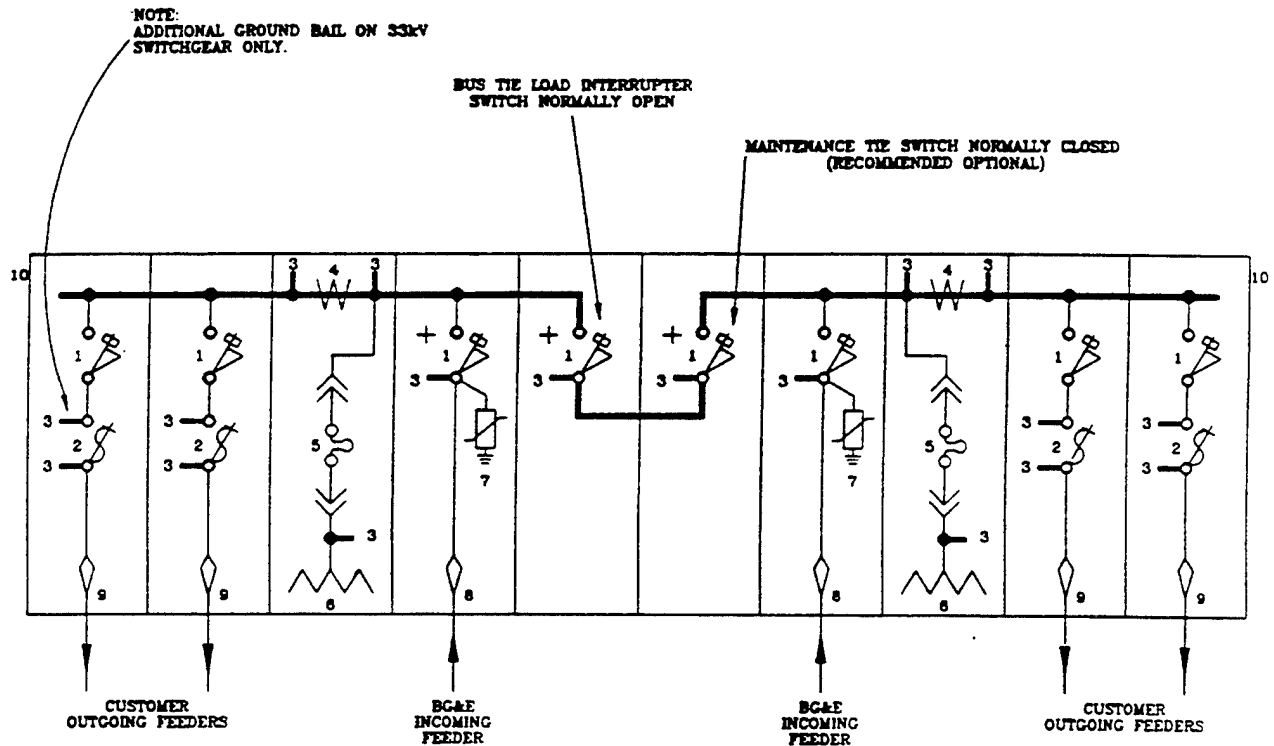
FIGURE 2

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GENERAL SPECIFICATION

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SHEET #32



+ KEY INTERLOCKS TO PREVENT PARALLELING INCOMING FEEDERS.

TYPICAL ARRANGEMENT ALSO APPLICABLE TO POWER OPERATED SWITCHES EQUIPPED
WITH AUTOMATIC TRANSFER OPERATION.

NOTE: SPLIT-BUS SUPPLY MAY BE REQUIRED BY BG&E BASED ON LOAD MAGNITUDE AND LOCATION.

LEGEND

- | | |
|---|--|
| 1. LOAD INTERRUPTER SWITCH | 6. BG&E FUSES |
| 2. POWER FUSES | 7. BG&E SURGE ARRESTERS |
| 3. GROUNDING BAILES | 8. BG&E CABLE TERMINATIONS |
| 4. BG&E METERING CURRENT TRANSFORMERS | 9. CABLE TERMINATIONS |
| 5. BG&E METERING POTENTIAL TRANSFORMERS | 10. PROVISIONS FOR FUTURE SWITCHGEAR EXTENSION |

TWO BG&E FEEDERS - SPLIT BUS SWGR.

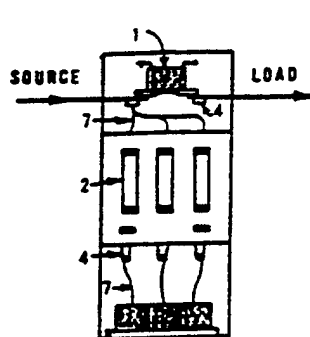
FIGURE 3

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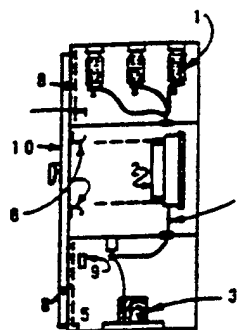
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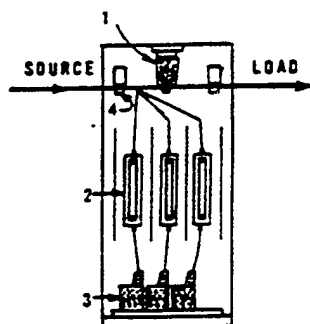


FRONT VIEW

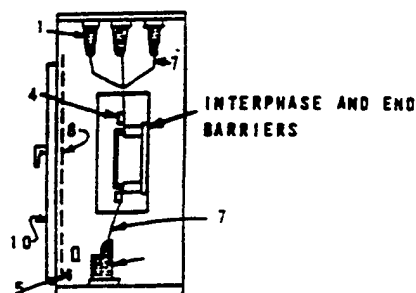


SIDE VIEW

TYPICAL ARRANGEMENT FOR 13.2kV METERING UNIT.



FRONT VIEW



SIDE VIEW

TYPICAL ARRANGEMENT FOR 33kV METERING UNIT.

NOTE: TYPICAL ARRANGEMENT SHOWN DOES NOT PRECLUDE OTHERS. PROVIDED BG&E APPROVAL IS GIVEN PRIOR TO SWITCHGEAR FABRICATION.

LEGEND

- | | |
|----------------------------------|---|
| 1. BG&E CURRENT TRANSFORMERS | 6. GROUNDING FINGERS (P.T. FUSES) |
| 2. BG&E POTENTIAL TRANSF. FUSES | 7. CUSTOMER WIRING |
| 3. BG&E POTENTIAL TRANSFORMERS | 8. HINGED SCREEN BARRIER |
| 4. GROUNDING BAILS (C.T. & P.T.) | 9. TERMINAL BLOCK & CUSTOMER SECONDARY WIRING |
| 5. GROUNDING BAIL (GROUND BUS) | 10. PADLOCKABLE DOOR |

BG&E METERING UNITS

FIGURE 4

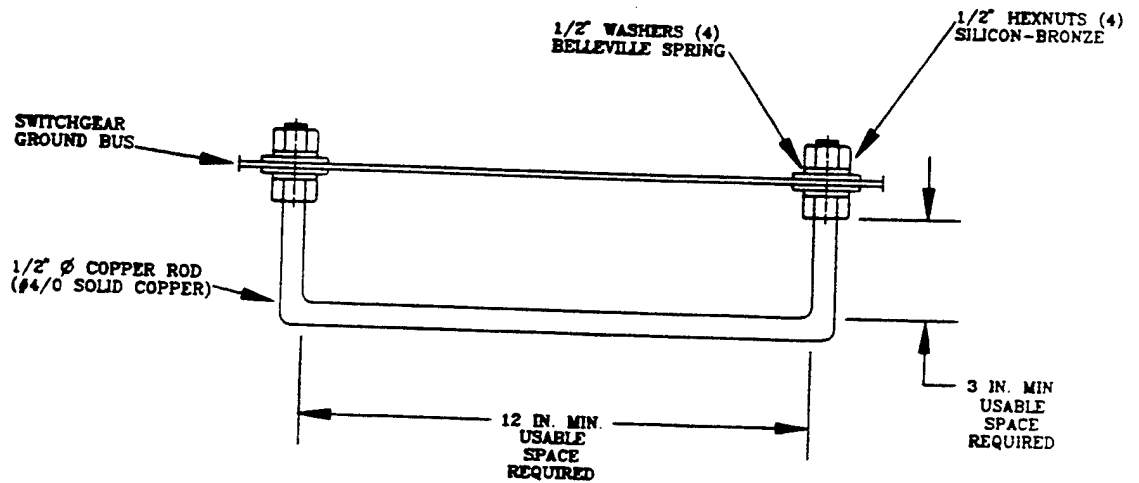
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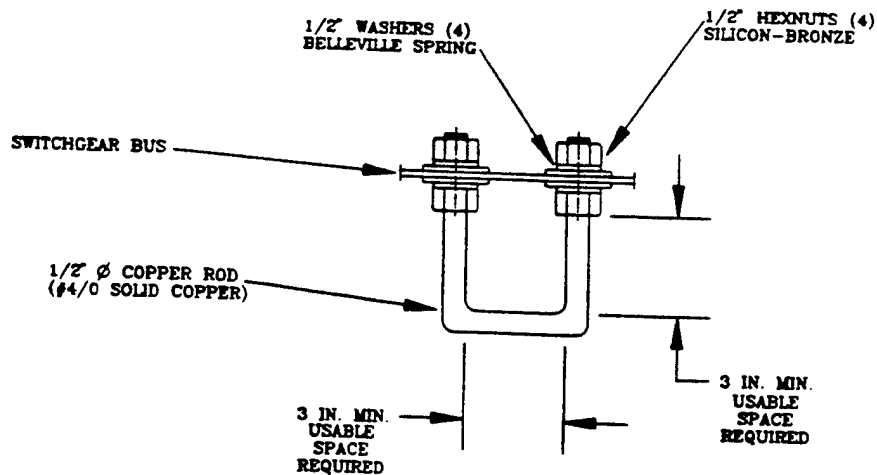
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SHEET #34



SWITCHGEAR GROUND BUS



CURRENT & POTENTIAL TRANSFORMER GROUND BAILS

ALTERNATE DESIGNS MAY BE CONSIDERED BY BG&E PROVIDED THEY ARE APPROVED BY BG&E PRIOR TO FABRICATION OF SWITCHGEAR AND THEY ARE CERTIFIED BY TEST TO WITHSTAND MOMENTARY RMS ASSYMETRICAL FAULT CURRENT RATING OF THE SWITCHGEAR.

MINIMUM GROUNDING BAIL REQUIREMENTS

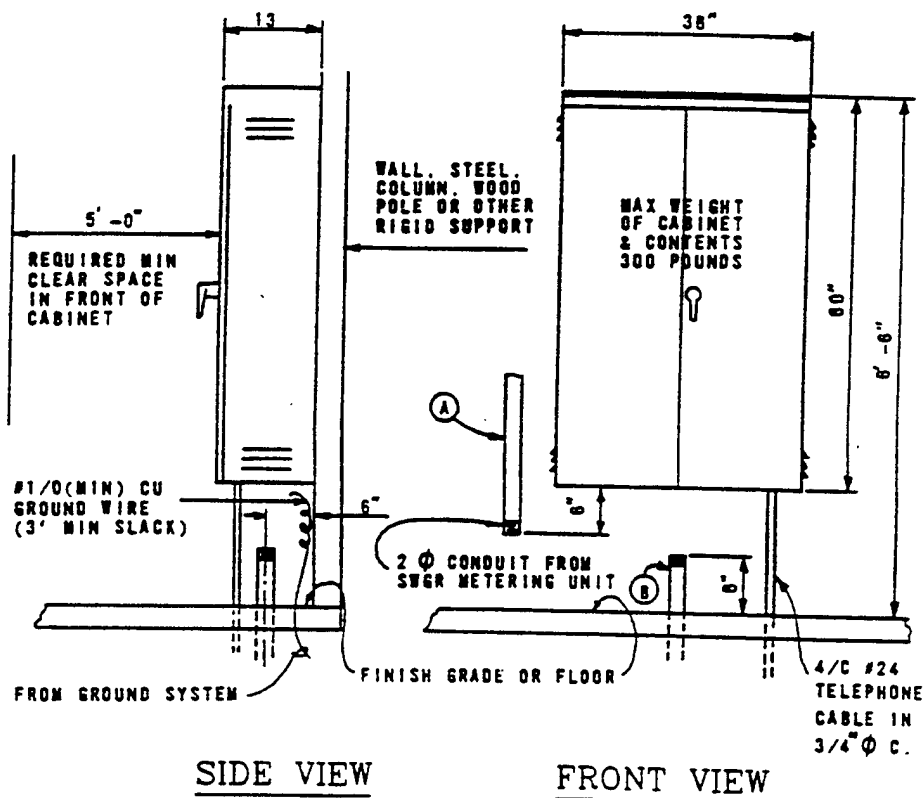
FIGURE 5

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SHEET #35



- A TERMINATION BY CUSTOMER OF 2" ϕ CONDUIT FOR ABOVE GROUND/FLOOR INSTALLATION.
B TERMINATION BY CUSTOMER OF 2" ϕ CONDUIT FOR BELOW GROUND/FLOOR INSTALLATION.
1. CUSTOMER TO PROVIDE A 2" ϕ CONDUIT (RIGID METAL, RIGID NONMETALLIC, OR ELECTRICAL METALLIC TUBING, AS REQUIRED/PERMITTED BY NATIONAL ELECTRICAL CODE).
 2. CUSTOMER TO PROVIDE A #1/0 (MIN.) BARE COPPER WIRE FROM SUBSTATION GROUND SYSTEM TO METER CABINET WITH 3' MIN. SLACK FOR GROUNDING CABINET.
 3. CUSTOMER TO PROVIDE A 4/C #24 AWG. SOLID COPPER (TWO TWISTED PAIR) TELEPHONE CABLE FROM CUSTOMER TELEPHONE SYSTEM (TO BE USED FOR BG&E REMOTE METERING).

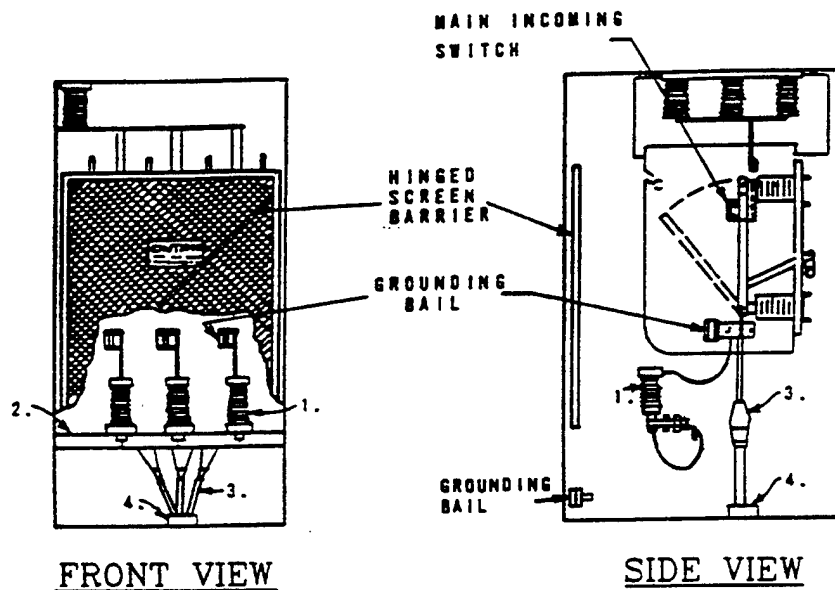
BG&E METER CABINET INSTALLATION
OUTDOOR/INDOOR
FIGURE 6

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SHEET #36



LEGEND

1. DISTRIBUTION CLASS METAL-OXIDE SURGE ARRESTERS BY BG&E.
2. REMOVABLE MOUNTING BRACKET BY CUSTOMER.
3. INCOMING CABLE TERMINATION BY BG&E.
4. 6" ϕ RIGID NON-METALLIC CONDUIT BY CUSTOMER.

BG&E SURGE ARRESTERS
FIGURE 7

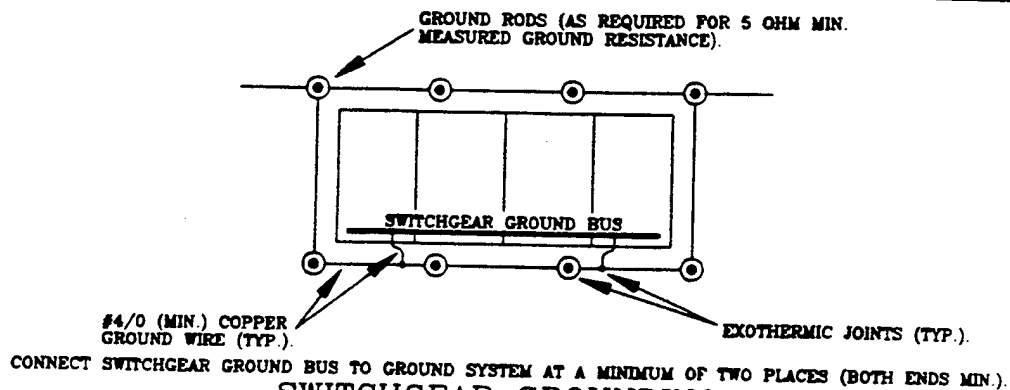
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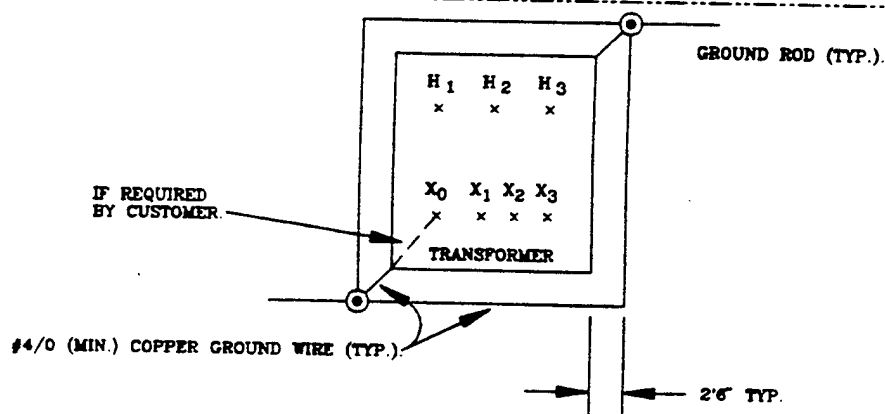
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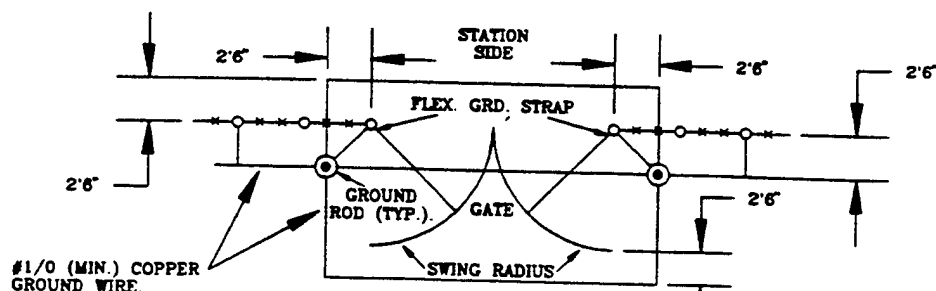
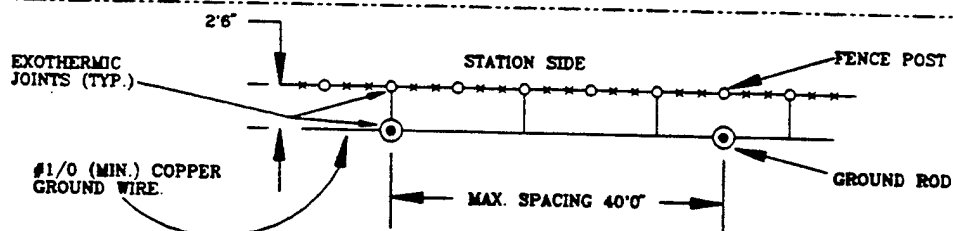
SHEET #37



SWITCHGEAR GROUNDING



TRANSFORMER GROUNDING



FENCE & GATE GROUNDING (IF APPLICABLE)
SUBSTATION GROUNDING DETAILS

FIGURE 8

ATTACHMENT 8.3
ELECTRIC UTILITY BILLS

METER READING DATES

12/2/93 TO 1/3/94

NEXT SCHEDULED READING DATE

12/31/94

DUE

1/26/94

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

5600 MARYLAND BLVD *SECT AA 9722
U S DEPT OF THE ARMY 6940 W4C
DAAD 05-70-C-0096
ATTN STEAP-SV-RP
ABRON PRV GRD MD 21005

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

	JUN-SEPT —		DAYS		OCT-MAY —		32		DAYS		TOTAL	
	(1) UNITS	(2) RATE	(3)=(1)X(2) AMOUNT \$	(4) UNITS	(5) RATE	(6)=(4)X(5) AMOUNT \$	(7)=(1)+(4) KWH	(8)=(3)+(6) NET AMT.				
A Customer Charge Per Month	—	—	—	—	—	—	—	—	\$750.00			

B. Demand Charges:

	KW	Per KWII	KW	Per KW
Production & Transmission		\$ 12.09	21760	\$ 5.99
Distribution		\$ 2.33	21540	\$ 2.33
				\$ 50188.20
				\$ 130342.40

C. ENERGY CHARGES:

	KWH	Per KWII	KWH	Per KWII
On-Peak		\$.03918	3053081	\$.02385
Intermediate Peak		\$.02870	2371663	\$.02165
Off-Peak		\$.01596	6348256	\$.01302
Total Energy Charges			11773000	
				\$ 206816.77
				\$ 51346.50
				\$ 72815.98

FOR OFFICE USE ONLY	
TC	C/C
SCHED. CODE	
NO. OF METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
* DEMAND CHARGE	

Fuel Rate - Total Energy KWH@ .01296 152578.08
Sub-Total \$ 540675.45

DATE 12/29 11:00
TIME 11:00
DEMAND 21760

County Surcharge

~~XXXXXXCHARGE~~ RIDER 5 AIR COND. CREDIT 0
Elec. Envir. Surcharge 1000.00

CREDIT PER USE OF TRANSMISSION LINE
PER CONTRACT 6/26/50

Sub-Total \$ 541675.45
~~XXXXXX~~ 731.00

~~XXXXXXCHARGE~~

Total Electric Gross: Net:

\$ 540944.45 \$ 540944.45

METER READING DATES

1/3/94 TO 1/31/94

NEXT SCHEDULED READING DATE

3/2/94

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

DUE

2/28/94

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

	JUN-SEPT		DAYS		OCT-MAY		DAYS		TOTAL	
	(1) UNITS	(2) RATE	(3)=(1)X(2) AMOUNT \$	(4) UNITS	(5) RATE	(6)=(4)X(5) AMOUNT \$	(7)=(1)+(4) KWH	(8)=(3)+(6) NET AMT.		
A. Customer Charge Per Month	—	—	—	—	—	—	—	\$750.00		

B. Demand Charges:

	KW	Per KWH	KW	Per KW		
Production & Transmission		\$ 12.09	26700	\$ 5.99	159933.00	\$ 159933.00
Distribution		\$ 2.33	26460	\$ 2.33	61651.80	\$ 61651.80

C. ENERGY CHARGES:

	KWH	Per KWH	KWH	Per KWH		
On-Peak		\$.03918	3183427	\$.02385	75924.73	75 924.73
Intermediate Peak		\$.02870	2551665	\$.02165	55243.55	55243.55
Off-Peak		\$.01596	6287908	\$.01302	81868.56	81868.56
Total Energy Charges			12023000		12023000	\$ 213036.84

FOR OFFICE USE ONLY	
TC	C/C
SCHED. CODE	
NO. OF METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
DEMAND CHARGE	

DATE
1/19TIME
9:45DEMAND
26700

"RIDER #5 AIR COND. CREDIT"

Fuel Rate - Total Energy KWH@ .01296 155818.08
Sub-Total \$ 591189.72

County Surcharge

XSMHXXSEKXXCHNXX

Elec. Envir. Surcharge

Sub-Total

XSMHXXSEK

XCHNXXCHNXX

CREDIT PER USE OF TRANSMISSION

LINE PER CONTRACT 6/26/50

Total Electric Gross:

Net:

\$ 591458.72 \$ 591458.72

METER READING DATES
1/31/94 TO 3/2/94
NEXT SCHEDULED READING DATE
3/31/94

BALTIMORE GAS AND ELECTRIC COMPANY
P.O. BOX 630632
BALTIMORE, MARYLAND 21263

DUE

3/25/94

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

5600 MARYLAND BLVD SECT AA
U S DEPT OF THE ARMY
DAAD 05-70-C-0096
ATTN STEAP-SV-RP
ABRON PRV GRD MD 21005

	JUN-SEPT —		DAYS		OCT-MAY —		30		DAYS		TOTAL	
	(1) UNITS	(2) RATE	(3)=(1)X(2) AMOUNT \$	(4) UNITS	(5) RATE	(6)=(4)X(5) AMOUNT \$	(7)=(1)+(4) KWII	(8)=(3)+(6) NET AMT.				
A. Customer Charge Per Month	—	—	—	—	—	—	—	\$750.00				

B. Demand Charges:

	KW	Per KWII	KW	Per KW
Production & Transmission		\$ 12.09	25360	\$ 5.99
Distribution		\$ 2.33	25080	\$ 2.33
				\$ 58436.40
				\$ 151906.40

C. ENERGY CHARGES:

	KWII	Per KWII	KWII	Per KWII
On-Peak		\$.03918	3264481	\$.02385
Intermediate Peak		\$.02870	2486753	\$.02165
Off-Peak		\$.01596	6590766	\$.01302
Total Energy Charges			12342000	
				\$ 217507.84
			12342000	\$ 217507.84

FOR OFFICE USE ONLY	
TC	C/C
SCHED. CODE	
NO. OF METERS	
LATE PYMT. CHG.	
CHARGE: PLUS	

DATE 2/10 TIME 10:00 DEMAND 25360

Fuel Rate - Total Energy KWII@ .01296 159952.32
Sub-Total \$ 588552.96

County Surcharge

RIDER 5 AIR CONDITIONING CREDIT ~~XXXXXX~~ ~~XXXXXX~~ ~~XXXXXX~~
Elec. Envir. Surcharge 1000.00

Sub-Total \$ 589552.96
~~XXXXXX~~

CREDIT PER USE OF TRANSMISSION
LINE PER CONTRACT 6/26/50

Total Electric Gross: ~~XXXXXX~~ 731.00
Net: \$ 588821.96 588821.96

BALTIMORE GAS AND ELECTRIC COMPANY
P.O. BOX 630632
BALTIMORE, MARYLAND 21263

1/94 TO 3/31/94
SCHEDULED READING DATE

1/94

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

	JUN-SEPT -		DAYS		OCT-MAY -		29		DAYS		TOTAL	
	(1) UNITS	(2) RATE	(3)=(1)X(2) AMOUNT \$		(4) UNITS	(5) RATE	(6)=(4)X(5) AMOUNT \$		(7)=(1)+(4) KWH	(8)=(3)+(6) NET AMT.		
Customer Charge Per Month	—	—	—		—	—	—		—	—	\$750.00	

KW		Per KW		KW		Per KW	
Demand Charges:							
Production & Transmission		\$ 12.09		23880		\$ 5.99	143041.20
Distribution		\$ 2.33		23640		\$ 2.33	55081.20

KWH		Per KWH		KWH		Per KWH	
ENERGY CHARGES:							
On-Peak		\$.03918		3000393		\$.02385	71559.37
Intermediate Peak		\$.02870		2405625		\$.02165	52081.78
Off-Peak		\$.01596		5499982		\$.01302	71609.77
Total Energy Charges				10906000			10906000

Fuel Rate - Total Energy KWH@ .01296 141341.76

FOR OFFICE USE ONLY	
TC	C/C
SCHED. CODE	
NO. OF METERS	
DATE PYMT. CHG.	
CHARGE:	

DATE: 3/17
TIME: 9:00
DEMAND: 23880

Sub-Total \$ 535465.08
County Surcharge
Elec. Envir. Surcharge

RIDER 5 AIR COND. CREDITS XXXXXXXXXX
Sub-Total \$ 536465.08

CREDIT PER USE OF TRANSMISSION LINE
PER CONTRACT 6/26/50

XXXXXXXXXX
XXXXXXXXXX

Total Electric Gross: \$ 535734.08
Net: \$ 4.08

5600 MARYLAND BLVD *SECT AA 9722
U S DEPT OF THE ARMY 6940
DAAD 05-70-C-0096 W4C
ATTN STEAP-SV-RP
ABRDN PRV GRD MD 21005

METER READING DATES

3/31/94 TO 4/29/94

NEXT SCHEDULED READING DATE

6/1/94

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

5600 MARYLAND BLVD *SECT AA 9722
 U S DEPT OF THE ARMY 6940
 DAAD 05-70-C-0096 WC
 ATTN STEAP-SV -RP
 ABERDEEN PRV GRND MD 21005

DATE

6/9/94

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

	JUN-SEPT		OCT-MAY		DAYS		DAYS		TOTAL	
	(1) UNITS	(2) RATE	(3)=(1)X(2) AMOUNT \$	(4) UNITS	(5) RATE	(6)=(4)X(5) AMOUNT \$	(7)=(1)+(4) KWII	(8)=(3)+(6) NET AMT.		
A. Customer Charge Per Month	—	—	—	—	—	—	—	\$750.00		

B. Demand Charges:

	KW	Per KWII	KW	Per KW		
Production & Transmission		\$ 12.09	19500	\$ 5.99	116805.00	\$ 116805.00
Distribution		\$ 2.33	19260	\$ 2.33	44875.80	\$ 44875.80

C. ENERGY CHARGES:

	KWII	Per KWII	KWII	Per KWII		
On-Peak		\$.03918	2340775	\$.02385	55827.48	55827.48
Intermediate Peak		\$.02870	1975527	\$.02165	42770.16	42770.16
Off-Peak		\$.01596	4615698	\$.01302	60096.39	60096.39
Total Energy Charges			8932000			\$ 158694.03

FOR OFFICE USE ONLY	
TC	C/C
SCHED. CODE	
NO. OF METERS	
LATE PYMT. CHG.	
CHARGE:	

DATE: 4/7

TIME: 11:00

DEMAND: 19500

CREDIT PER USE OF
TRANSMISSION LINE

PER CONTRACT 6/26/50

Fuel Rate - Total Energy KWII@ .01296

115758.72

Sub-Total

\$ 436883.55

County Surcharge

RIDER 5 AIR CONDITIONING CREDIT

XXXXXX

0

Elec. Envir. Surcharge

1000.00

Sub-Total

\$ 437883.55

XXXXXX

XXXXXX

731.00

Total Electric Gross:

Net

\$ 437152.55 \$ 52.55

METER READING DATES

4/29/94 to 6/1/94

NEXT SCHEDULED READING DATE

6/30/94

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

DUE

6/28/94

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

	JUN-SEPT		1		DAYS		OCT-MAY		32		DAYS		TOTAL	
	(1) UNITS	(2) RATE	(3)=(1)X(2) AMOUNT \$	(4) UNITS	(5) RATE	(6)=(4)X(5) AMOUNT \$	(7)=(1)X(4) KW/H	(8)=(3)X(6) NET AMT.						
A. Customer Charge Per Month	---	---	---	---	---	---	---	\$750.00						

B. Demand Charges:

	KW	Per KWII	KW	Per KW
Production & Transmission	0	\$ 12.09	20420	\$ 5.99
Distribution		\$ 2.33	21660	\$ 2.33
				\$ 50467.80
				\$ 122315.80

C. ENERGY CHARGES:

	KWH	Per KWII	KWH	Per KWII
On-Peak	0	\$.03918	2520007	\$.02385
Intermediate Peak	21162	\$.02870	2225199	\$.02165
Off-Peak	81680	\$.01596	5071952	\$.01302
Total Energy Charges	102842		9817158	
				\$ 176225.51
				\$ 60102.17
				\$ 48782.91
				\$ 67340.43

FOR OFFICE USE ONLY	
TC	C/C
SCHED. CODE	
NO. OF METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE: \$750.00 PLUS DEMAND CHARGE	

DATE: 5/25/94
TIME: 11:00
DEMAND: 22020

Fuel Rate - Total Energy KWII@ .01296 128563.20

Sub-Total

\$ 478322.31

County Surcharge

Rider 5 Air Conditioning Credit ~~2444.82~~ 6220.00CF

Elec. Envir. Surcharge

1000.00

Sub-Total

\$ 473102.31

State Tax

~~6348.62~~ 731.00CF

Total Electric Gross:

Net:

\$ 472371.31 \$ 472371.31

Credit Per use of transmission line per contract 6/26/50.

U S DEPT OF THE ARMY
DAAD 05-70-C-0096
ATTN STEAP-SV-RP
ABERDEEN PRV GRND MD 21005

METER READING DATES
6/1/94 to 6/30/94

NEXT SCHEDULED READING DATE

8/1/94

DUE

7/27/94

ELECTRIC SCHEDULE

BALTIMORE GAS AND ELECTRIC COMPANY
P.O. BOX 630632
BALTIMORE, MARYLAND 21263

U S DEPT OF THE ARMY
DAAD 05-70-G-0096
ATTN STEAP-SV-RP
ABERDEEN PRV GRND MD 21005

TIME-OF-DAY (TOD) BILL

JUN-JULY		29 Days	
(1)	(2)	(3)=(1)x(2)	AMOUNT \$
UNITS	RATE		

OCT-MAY		Days	
(4)	(5)	(6)=(4)x(5)	AMOUNT \$
UNITS	RATE		

Total	
(7)=(1)+(4)	(8)=(3)+(6)
KWH	NET AMT

A. Customer Charge Per Month

KW		Per KW	
26460	\$12.09	319901.40	
26080	\$ 2.33	60766.40	

KW		Per KW	
	\$5.99		319901.40
	\$2.33		60766.40

KW		Per KW	
	\$5.99		319901.40
	\$2.33		60766.40

B. Demand Charges:

Production & Transmission	
Distribution	

KW		Per KW	
4343732	\$.03893	169101.49	
2260535	\$.02845	64312.22	
4840733	\$.01571	76047.92	
11445000			

KWH		Per KWH	
	\$.02360		169101.4
	\$.02140		64312.2
	\$.01277		76047.9
11445000			309461.6

Total Energy Charges

11445000

309461.6

Fuel Rate Total Energy

.01296

148327.2

FOR OFFICE USE ONLY	
TC	C/C
SCHED.	
CODE	
NO. OF	
METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
DEMAND CHARGE	

Rider 5 Air Conditioning Credit

County Surcharge

State Surcharge

Local, Envir. Surcharge

Sub-Total

City/County Tax

Total Electric Gross:

Net:

Date: 6/15/94

Time: 13:30

Demand: 26460

\$ 833255.63

833255.63

7/94

METER READING DATES

6/30/94 TO 8/1/94

NEXT SCHEDULED READING DATE

8/31/94

DOB

8/24/94

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

U S DEPT OF THE ARMY

DAAD 05-70-G-0096

ATTN STEAP-SV-RP

ABERDEEN PRV GRND MD 21005

ELECTRIC SCHEDULE

P TIME-OF-DAY (TOD) BILL

	JUN-SEPT		Days		OCT-MAY		Days		Total	
	(1)	(2)	(3)=(1)x(2)	AMOUNT \$	(4)	(5)	(6)=(4)x(5)	(7)=(1)+(4)	(8)=(3)+(6)	NET /
UNITS		RATE			UNITS	RATE	AMOUNT \$	KWH		
A. Customer Charge Per Month										\$750.

D. Demand Charges:

	KW		Per KW		KWH		Per KWH		Total	
	25720	25320	\$12.09	\$2.33			\$5.99	\$2.33		
Production & Transmission										310954
Distribution										58995

C. ENERGY CHARGES:

	KW		Per KW		KWH		Per KWH		Total	
	4462444	2253523	\$0.03893	\$0.02845			\$0.02360	\$0.02140		
On-Peak										173722
Intermediate Peak										64112
Off-Peak										96224
Total Energy Charges										334059

FOR OFFICE USE ONLY

TC	C/C
SCHED. CODE	
NO. OF METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS DEMAND CHARGE	

DEMAND: 25720
DATE: 7/14/94
TIME: 13:30

Final Rate Total Energy

KWH @ .01296

Sub-Total

County Surcharge

Illec. Envir. Surcharge

Sub-Total

City/County Tax

Total Electric Gross:

CREDIT PER USE OF TRANSMISSION
LINE PER CONTRACT 6/26/50

Net:

\$ 865228.70

865228.7

METER READING DATES

8/1/94 to 8/31/94

NEXT SCHEDULED READING DATE

10/3/94

DUE

9/27/94

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

ELECTRIC SCHEDULE

P TIME-OF-DAY (TOD) BILL

JUN-SLEPT		Days	
(1)	(2)	(3)=(1)x(2)	
UNITS	RATE	AMOUNT \$	

OCT-MAY		Days	
(4)	(5)	(6)=(4)x(5)	
UNITS	RATE	AMOUNT \$	

A. Customer Charge Per Month

B. Demand Charges:

KW		Per KW
25060	\$12.09	302975.40
24700	\$ 2.33	57551.00

KW		Per KW
	\$5.99	
	\$2.33	

C. ENERGY CHARGES:

KWII		Per KWII
4260778	\$.03893	165872.09
2232816	\$.02845	63523.62
5057406	\$.01571	79451.85
11551000		

KWII		Per KWII
	\$.02360	
	\$.02140	
	\$.01277	

Total Energy Charges

11551000

DATE TIME KW

8/4 13:45 25060

FOR OFFICE USE ONLY

TC	C/C
SCHED.	
CODE	
NO. OF	
METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
DEMAND CHARGE	

Final Rate Total Energy

KWII@

.01296

149700

Sub-Total

819824

County Surcharge

RIDER #5 AIR CONDITIONING CREDIT

6220

Elec. Envtl. Surcharge

1000

Sub-Total

814604

XXXXXX

731

City/County Tax

Net:

CREDIT FOR USE OF TRANSMISSION

LINE PER CONTRACT 6/26/50

Total Electric Gross:

\$ 813873.92

813873

5600 MARYLAND BLVD *SECT AA

U S DEPT OF THE ARMY

DAAD 05-70-C-0096

ATTN STEAP-FE-B

ABERDEEN PRV GRND MD 21005

97:

69:

W

METER READING DATES

10/3/94 TO 11/1/94
NEXT SCHEDULED READING DATE

12/2/94

DUE

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

12/13/94

ELECTRIC SCHEDULE

P TIME-OF-DAY (TOD) BILL

	JUN-SEPT		Days	
	(1)	(2)	(3)=(1)x(2)	
UNITS		RATE	AMOUNT \$	

A. Customer Charge Per Month

B. Demand Charges:

Production & Transmission	KW	Per KW
Distribution		

C. ENERGY CHARGES:

	KWH	Per KWH	
On-Peak	3320	\$.03893	129.25
Intermediate Peak	1840	\$.02845	52.35
Off-Peak	1600	\$.01571	25.14
Total Energy Charges	6760		

5900 WESTWOOD RD *SECT EA 9722
U S DEPT OF THE ARMY 6960
DAAD 05-70-C-0096 WC
ATTN STEAP-FE-B
ABERDEEN PRV GRD MD 21005

	OCT-MAY		Days		Total
	(4)	(5)	(6)=(4)x(5)	(7)=(1)x(4)	(8)=(3)+(6)
UNITS		RATE	AMOUNT \$	KWH	NET AMT.

	KW	Per KW	
11806	\$5.99	70717.94	70717.94
-	\$2.33		

	KWH	Per KWH	
1558772	\$.02360	36787.02	36916.27
1329896	\$.02140	28459.77	28512.12
3059692	\$.01277	39072.27	39097.41
5948360		5955120	104525.80

Final Rate Total Energy

KWH @ .01227

73069.32
249063.06

FOR OFFICE USE ONLY

TC	C/C
SCHED.	
CODE	
NO. OF METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
DEMAND CHARGE	

DATE: 10/20/94

TIME: 11:00

DEMAND KW 11806

CREDIT FOR USE OF TRANSMISSION
LINE PER CONTRACT DATED 6/26/50

County Surcharge

~~XXXXXX~~

Elec. Envir. Surcharge

Sub-Total

~~XXXXXX~~

City/County Tax

Total Electric Gross:

Net:

\$ 249225.33

249225.33

C6/4/11

PAITIMORI: MARYLAND 21263

ALAN STEAP-FE-B
ABERDEEN PRV GRD MD 21005

14/9/

ELECTRIC SCHEDULE			
JUN-SEPT		Days	
(1)	(2)	(3) \times (1) \times (2)	AMOUNT \$
UNITS	RATE		
A. Customer Charge Per Month			

A. Customer Charge Per Month

B. Demand Charges:		KW	Per KW
Production & Transmission			\$ 12.09
Distribution			\$ 2.33

2. FAMILY CLARIS:

On-Peak	\$.03893	
Intermediate Peak	\$.02845	
Off-Peak	\$.01571	
Total Energy Charges		.

Total Energy Changes

FOR OFFICE USE ONLY	
TC	C/C
SCHED.	
CODE	
NO. OF	
METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
DEMAND CHARGE	

[illegible]

DATE: 12/2/06

6/7/71 : JLVG

TIME: 10:40
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MAND: 19440

CREDIT FOR USE OF TRAINING MATERIALS: 200 / 150

Final Paper

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2010-2011

10001-0100

WAVELENGTH

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Total Electric Gross:

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MIETER READING DATES

1/3/95 TO 1/31/95

NEXT SCHEDULED READING DATE

3/2/95

DUE

3/2/95

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 64844

BALTIMORE, MARYLAND 21264-4844

P TIME-OF-DAY (TOD) BILL

ELECTRIC SCHEDULE

JUN-SEPT

Days

(1) UNITS (2) RATE (3)=(1)x(2) AMOUNT \$

UNITS RATE AMOUNT \$

A. Customer Charge Per Month

KW Per KW

\$12.09

\$ 2.33

B. Demand Charges:

Production & Transmission

Distribution

C. ENERGY CHARGES:

KW Per KW

\$.03893

\$.02845

\$.01571

On-Peak

Intermediate Peak

Off-Peak

Total Energy Charges

FOR OFFICE USE ONLY

TC C/C

SCHED. CODE

NO. OF METERS

LATE PYMT. CHG.

MINIMUM CHARGE:

\$750.00 PLUS

DEMAND CHARGE

DATE: 1/5/95

TIME: 8:30

DEM KW: 23400

CREDIT FOR USE OF TRANSMISSION LINE

PER CONTRACT DATED 6/26/50

DATE: 1/5/95

TIME: 8:30

DEM KW: 23400

CREDIT FOR USE OF TRANSMISSION LINE

PER CONTRACT DATED 6/26/50

DATE: 1/5/95

TIME: 8:30

DEM KW: 23400

U.S. DEPT OF THE ARMY

DAAD 05-70-C-0096

ATTN STEAP-FE-B

ABERDEEN PRV GRND MD 21005

6940

WC

OCT-MAY 28 Days

(4) UNITS (5) RATE (6)=(4)x(5) AMOUNT \$

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Total

(7)=(1)x(4) KWII

(8)=(3)x(6) NET AMT.

UNITS RATE AMOUNT \$

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OCT-MAY 28 Days

(4) UNITS (5) RATE (6)=(4)x(5) AMOUNT \$

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OCT-MAY 28 Days

(4) UNITS (5) RATE (6)=(4)x(5) AMOUNT \$

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OCT-MAY 28 Days

(4) UNITS (5) RATE (6)=(4)x(5) AMOUNT \$

UNITS RATE AMOUNT \$

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UNITS RATE AMOUNT \$

UNITS RATE AMOUNT \$

UNITS RATE AMOUNT \$

METER READING DATES
1/31/95 to 3/2/95
NEXT SCHEDULED READING DATE:
3/31/95

BALTIMORE GAS AND ELECTRIC COMPANY
P.O. BOX 64844
BALTIMORE, MARYLAND 21264-4844

DUE

3/29/95

ELECTRIC SCHEDULE

JUN-SEPT		OCT-MAY		Days		Days		Total	
(1)	(2)	(1)	(2)	(3)=(1)x(2)	(4)	(5)	(6)=(4)x(5)	(7)=(1)+(4)	(8)=(3)+(6)
UNITS	RATE	UNITS	RATE	AMOUNT \$	UNITS	RATE	AMOUNT \$	KWH	NET AMT.
									\$750.00

A. Customer Charge Per Month

B. Demand Charges:

Production & Transmission		Per KW	
		\$12.09	
		\$ 2.33	

C. ENERGY CHARGES:

On-Peak		Per KWII	
		\$.03893	
		\$.02845	
		\$.01571	
Intermediate Peak			
Off-Peak			

Total Energy Charges

FOR OFFICE USE ONLY	
TC	C/C
SCHED.	
CODE	
NO. OF	
METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
DEMAND CHARGE	

Fuel Rate Total Energy

KWII		KWII@	
3233728	\$.02360	76315.98	
2511655	\$.02140	53749.42	
6528617	\$.01277	83370.44	
12274000		12274000	
Sub-Total		150601.98	
County Surcharge		0.00	
RIDER #5 AIR CONDITIONING CREDIT		1000.00	
Elec. Envir. Surcharge		584550.42	
Sub-Total		731.00CR	
Total Electric Gross:		583819.42	

CREDIT FOR USE OF TRANSMISSION LINE PER
CONTRACT DATED 6/26/50

56600 MARYLAND BLVD *SECT AA 9726
J S DEPT OF THE ARMY 6940
DAAD 05-70-C-0096 W C
ATTN STEAP-FE-B
ABERDEEN PROV GRND MD 21005

ELECTRIC SCHEDULE **P** **TIME-OF-DAY (TOD) BILL**

	JUN-SEPT	29 Days	OCT-MAY	Days	Total
	(1)	(2) RATE AMOUNT \$	(4) UNITS RATE	(6)=(4)x(5) AMOUNT \$	(7)=(1)+(4) KWH NET AMT.
Customer Charge Per Month					\$ 750.00

A. Customer Charge Per Month

B. Demand Charges:		KW	Per KW	KW	Per KW
	Production & Transmission	24840	\$ 12.09	300315.60	
	Distribution	24840	\$ 2.33	57877.20	
					300315.60
					57877.20

C. ENERGY CHARGES:

On-Peak	3974633	\$.03861	153460.58		.02328		153460.58
Intermediate Peak	2085533	\$.02813	58666.04		.02108		58666.04
Off-Peak	4642834	\$.01539	71453.22		.01245		71453.22
Total Energy Charges	10703000					10703000	283579.84

FOR OFFICE USE ONLY

CC.	C/C	Sub-Total
		773848.45
		County Surcharge
CHCHED.		6220.00
CODE		1000.00
NO. OF		Elec. Envir. Surcharge
METERS		Sub-Total
DATE PYMT CHG.		768628.45
		731.00CR
		City/County/Town

MINIMUM CHARGE:	
\$ 750.00	PLUS
DEMAND CHARGE	

DEMAND	24040	
Date	6/21/95	
Time	14:45	
	\$ 767897.45	\$ 767897.45

METER READING DATES

8/2/95 TO 8/31/95
NEXT SCHEDULED READING DATE
10/2/95

DUE

9/28/95

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

BALTIMORE GAS AND ELECTRIC COMPANY
P.O. BOX 64844
BALTIMORE, MARYLAND 21264-4844

5600 MARYLAND BLVD *SECT AA
U S DEPT OF THE ARMY
DAAD 05-70-C-0096
ATTN STEAP-FE-B
ABERDEEN PRV GRND MD 21005

9726
6940
WC

	JUN-SEPT 29		Days		OCT-MAY		Days		Total	
	(1) UNITS	(2) RATE	(3)=(1)X(2) AMOUNT \$		(4) UNITS	(5) RATE	(6)=(4)X(5) AMOUNT \$	(7)=(1)X(4) KWH	(8)=(3)X(6) NET AMT.	
A. Customer Charge Per Month										\$ 750.00

B. Demand Charges:

Production & Transmission	26880	\$ 12.09	324979.20	\$ 5.99		324979.20
Distribution	26880	\$ 2.33	62630.40	\$ 2.33		62630.40

C. ENERGY CHARGES:

On-Peak	4604218	\$.03861	177768.86				.02328		177768.86
Intermediate Peak	2366799	\$.02813	66578.06				.02108		66578.06
Off-Peak	5443983	\$.01539	83782.90				.01245		83782.90
Total Energy Charges	12415000							12415000	328129.82

OR OFFICE USE ONLY

C/C	
CHD.	
ODE	
O. OF	
LETTERS	
DATE PYMT. CHG.	

MINIMUM CHARGE:

\$ 750.00 PLUS
DEMAND CHARGE

Fuel Rate Total Energy	KWH@	.01143	141903.45
Sub-Total			858392.87
County Surcharge			
RIDER 5 AIR CONDITIONING CREDIT	XSDPPXSDPPXSDPPX		6220.00 CR
Elec. Envir. Surcharge			1000.00
Sub-Total			853172.87
XSDPPXSDPPX			731.00 CR
XSDPPXSDPPXSDPPX			
Total Electric Gross:			
Net:			
\$ 852441.87			852441.87

CREDIT FOR USE OF TRANSMISSION LINE
PER CONTRACT DATED 6/26

DATE: 8/2/95
TIME: 14:15
DEMAND: 26880

DATES

TO 10/2/95

ED READING DATE

45

BALTIMORE GAS AND ELECTRIC COMPANY
P.O. BOX 64844
BALTIMORE, MARYLAND 21264-4844

DAAD 05-70-U-0070
ATTN STEAP-FE-B
ABERDEEN PRV GRND MD 21005

TIME-OF-DAY (TOD) BILL

C. SCHEDULE	P	JUN-SEPT			OCT-MAY			Days		Total	
		(1) UNITS	(2) RATE	(3)-(1)x(2) AMOUNT \$	(4) UNITS	(5) RATE	(6)-(4)x(5) AMOUNT \$	(7)=(1)+(4) KWH	(8)=(3)+(6) NET AMT.		

Net Charge Per Month		KW	Per KW	276111.42	KW	Per KW	77.87		276189.29		
		22838	\$ 12.09	56758.80	13	\$ 5.99			56758.80		

Add Charges:		KWH	Per KWH	148805.76	KWH	Per KWH	0		148805.76		
Transmission & Distribution		24360	\$ 2.33	56758.80	0	\$ 0.2328			56764.26		

ROY CHARGES:		KWH	Per KWH	148805.76	KWH	Per KWH	0		148805.76		
Peak		3854073	\$.03861	56764.26	0	\$.02108			81682.67		
Immediate Peak		2017926	\$.02813	78392.43	264276	\$.01245	3290.24		287252.69		
Off-Peak		5093725	\$.01539		264276			11230000			
Total Energy Charges		10965724						.01143	128358.90		

Total Energy Charges		KWH@		Sub-Total		
FUEL RATE TOTAL ENERGY				County Surcharge	1000.00	
RIDER 5 AIR CONDITIONING CREDIT				Supp. Serv. Charge	750309.68	
				Elec. Envir. Surcharge	731.00	
				Sub-Total		

OFFICE USE ONLY		CITY/COUNTY TAX		Net:	749578.68	
C/C				Total Electric Gross:	\$ 749578.68	

CREDIT FOR USE OF TRANSMISSION LINE		DATE: 8/31/95	
PER CONTRACT DATED 6/26/50		TIME: 13:45	
DEMAND PRORATION SUMMER		SUMMER - 22838	
DEMAND PRORATION NON-SUMMER		WINTER	
200 x 2/32 = 13			

DEMAND CHARGE:		750.00 PLUS	
ND CHARGE			

PD (Bldg)
TOTAL
CONSUMER

252

ATTACHMENT 8.4
BG & E "BILLING INTERFACE DATA"

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***
 DEMAND BILLING - ELECTRIC
 ELECTRIC - METER TRANSLATION SUMMARY REPORT

NAME: USA ABERDEEN PROVING GROUND
 SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA
 CITY: ABERDEEN
 STATE: MD ZIP: 21005

BILLING GROUP: W
 ROUTE: 9726 FOLIO: 6940
 TAX CLASS: 7 CITY/COUNTY CODE: 6

LODESTAR CUSTID	CH	MT	SI	START TIME	STOP TIME	METER NUMBER	START INDEX	STOP INDEX	METER MULTIPLIER	METERED USE
1100011	1	1		06/01/95-12:05	06/30/95-10:47	50946244	86962.0	91375.0	1000.000000	4413000.0
1100012	2	1		06/01/95-12:05	06/30/95-10:47	50961016	70180.0	76470.0	1000.000000	6290000.0

7
 BILLY
 NAME

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

JULY 1995

DEMAND BILLING - ELECTRIC
TRANSLATION CONTROL SUMMARYDATE: 07/03/
PAGE: 1

TRANS PERIOD FROM: 06/01 TO: 06/30

BILLING GROUP: W

NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

CITY: ABERDEEN

STATE: MD ZIP: 21005

TAX CLASS: 7 CITY/COUNTY CODE: 6

RECORDER ID: 110001

CHAN	PULSE CONST	MT ST	METERED USE	TRANSLATED USE	PERCENTAGE DIFF	START TIME - 06/01/95-12:05	END TIME - 06/30/95-10:45	EXPECTED NO INTERVALS: 2780
1	30.000000	1	4413000	4413720	0.01632	RECORDED STOP TIME - 10:47	RECORDED NO INTERVALS: 2779	
2	30.000000	1	6290000	6290670	0.01065	START - DAY OF WEEK - 5	MISSING NO INTERVALS: 1	

DATE	PULSES				CONSUMPTION				TOTAL KWH
	CHAN 1 PULSES	CHAN 2 PULSES	CHAN 3 PULSES	CHAN 4 PULSES	CHAN 1 KWH	CHAN 2 KWH	CHAN 3 KWH	CHAN 4 KWH	
06/01/95	2510	3981			75300.0	119430.0			194730.0
06/02/95	4774	7951			143220.0	238530.0			381750.0
06/03/95	4227	6680			126810.0	200400.0			327210.0
06/04/95	3932	6298			117960.0	188940.0			306900.0
06/05/95	4717	8118			141510.0	243540.0			385050.0
06/06/95	5015	7554			150450.0	226620.0			377070.0
06/07/95	5130	8829			153900.0	264870.0			418770.0
06/08/95	5336	8944			160080.0	268320.0			428400.0
06/09/95	4608	7677			138240.0	230310.0			368550.0
06/10/95	3987	5982			119610.0	179460.0			299070.0
06/11/95	4591	6547			137730.0	196410.0			334140.0
06/12/95	4874	7668			146220.0	230040.0			376260.0
06/13/95	4570	7102			137100.0	213060.0			350160.0
06/14/95	4780	7469			143400.0	224070.0			367470.0
06/15/95	4692	7412			140760.0	222360.0			363120.0
06/16/95	4707	7350			141210.0	220500.0			361710.0
06/17/95	4032	6100			120960.0	183000.0			303960.0
06/18/95	4269	6093			128070.0	182790.0			310860.0
06/19/95	5277	8194			158310.0	245820.0			404130.0
06/20/95	5689	8714			170670.0	261420.0			432090.0
06/21/95	5884	9137			176520.0	274110.0			450630.0
06/22/95	5520	8141			165600.0	244230.0			409830.0
06/23/95	5774	6367			173220.0	191010.0			364230.0
06/24/95	5438	5407			163140.0	162210.0			325350.0
06/25/95	5757	5568			172710.0	167040.0			339750.0
06/26/95	6679	7502			200370.0	225060.0			425430.0
06/27/95	6160	7117			184800.0	213510.0			398310.0
06/28/95	5763	6484			172890.0	194520.0			367410.0
06/29/95	5987	6583			179610.0	197490.0			377100.0
06/30/95	2445	2720			73350.0	81600.0			154950.0
TOTAL	147124	209689			4413720.0	6290670.0			10704390.0

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

JULY 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 06/01 TO: 06/30

DEMAND BILLING - ELECTRIC
TRANSLATION CONTROL - TOD USAGE SUMMARY

DATE: 07/03/
PAGE: 1

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

TAX CLASS: 7 CITY/COUNTY CODE: 6

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

RECORDER ID: 110001
ADJUSTMENT OF TRANSLATION TO METER READINGS

CHAN	TRANS TOTAL	TRANSLATED USAGE BY PEAKS ON INT OFF	TRANSLATED PERCENTAGES ON INT OFF	METER TOTAL	METERED USAGE BY PEAKS ON INT OFF
1	4413720 SUM NON	1609800 868170 1935750	36.4726 19.6698 43.8576	4413000	SUM 1609536 868028 1935436 NON
2	6290670 SUM NON	2365350 1217640 2707680	37.6009 19.3562 43.0429	6290000	SUM 2365097 1217505 2707398 NON

MAX 60 MIN DEMAND SUMMARY

CHAN	DATE	TIME	DEMAND
1	06/06/95	22:00	12330
2	06/21/95	14:00	15300
			<u>17630</u>

JULY 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 06/01 TO: 06/30

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

1/4 HOUR 06/01

ENDING

DEMAND BILLING - ELECTRIC

DEMANDS AS TRANSLATED AND TOTALLED

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

STATE: MD ZIP: 21005

CITY: ABERDEEN

DATE: 07/03/

PAGE: 1

06/01	06/02	06/03	06/04	06/05	06/06	06/07	06/08	06/09	06/10	06/11	06/12	06/13	06/14	06/15
12240	12240	12840	12120	11880	12120	12480	13440	13560	12360	12000	12960	11280	11280	12240
11880	11880	12600	12120	11880	11880	12360	13200	13320	12240	11760	12840	11400	11160	12120
11520	11520	12360	11760	11520	11760	12120	13080	13080	11880	11640	12600	11160	11040	12000
11520	11520	12360	11400	11400	11640	11880	12840	12840	11760	11520	12600	11040	11040	11880
11520	11520	12240	11400	11400	11640	11760	12960	12720	11760	11640	12600	11040	10920	11760
11640	11640	12120	11520	11160	11400	11640	12720	12600	11640	11400	12480	10920	10920	11760
11520	11520	12120	11280	11160	11400	11760	12720	12480	11640	11160	12480	10920	10800	11400
11280	11280	12000	11280	11160	11400	11640	12600	12240	11520	11400	12360	10800	10800	11400
11400	11400	12240	11280	11040	11400	11640	12600	12360	11520	11160	12480	10920	10680	11280
11280	11280	12000	11160	11040	11160	11640	12360	12120	11640	11160	12480	10800	10800	11280
11400	11400	12000	11160	11040	11160	11640	12360	12000	11280	11160	12480	10800	10800	11280
11280	11280	12120	11160	10920	11280	11640	12480	11880	11640	11160	12480	10800	10680	11160
11160	11160	11880	11160	10920	11040	11640	12240	11880	11280	11160	12240	10800	10920	11160
11400	11400	11760	10920	10920	11160	11640	12360	12000	11280	10920	12240	10800	10680	11040
11280	11280	11640	10920	11160	11280	11880	12600	12000	11400	10920	12480	10920	10920	11040
11520	11520	11760	10920	11160	11520	12240	12480	12120	11280	11040	12480	10800	10920	11160
11640	11640	11760	10920	11160	11520	12240	12480	12120	11280	11040	12480	10800	10920	11160
11880	11880	11760	10800	11520	11880	12480	12960	12120	11280	10920	12600	11280	11280	11520
12120	12120	11640	10440	11520	11880	12720	12960	11880	11160	11160	12840	11640	11520	11520
12120	12120	11760	10560	11880	12000	12960	13320	12240	11040	11040	12840	11400	11520	11520
12840	12840	12360	10680	12600	12960	13560	14160	12960	11760	11040	13800	11520	11760	11760
13320	13320	12360	10800	12960	13560	14040	14760	13560	11760	11160	14280	12840	12600	12600
13920	13920	12480	10800	13800	14160	15000	15480	13920	11640	11280	15120	13440	12360	12840
14880	14880	12720	11160	15600	15720	15720	16680	14640	12000	11160	15840	14520	13200	14160
16440	16440	12720	11280	16680	16320	17280	18360	15840	12000	11520	17880	15840	14040	14880
17160	17160	12840	11520	17520	17040	18000	19440	16560	11880	11640	18600	16680	16200	15600
17640	17640	12960	11760	18240	17520	19200	20280	16800	11880	11760	19560	16680	16200	16080
18120	18120	13080	12120	18600	18000	19440	20880	17280	11880	12480	20040	17400	17280	17040
18240	18240	13440	12480	18960	18240	19800	21480	17280	11880	12480	20280	17760	17760	17520
18840	18840	13680	12600	19320	18360	20040	21960	17760	12120	12840	20400	17760	17640	17520
19320	19320	13920	12960	19800	18840	20640	22320	18000	12240	13080	21000	18120	18240	18240
19200	19200	14400	13080	20160	19080	21000	22440	18120	12600	13440	21000	18000	18360	18360
19680	19680	14520	13440	20280	18840	21000	22680	17880	12600	13560	21000	18240	18720	18480
19800	19800	14880	13680	20520	19080	21360	22800	18480	12720	13680	20880	18840	18840	18480
20160	20160	14880	13680	20760	19560	21600	22800	18840	12840	13920	21120	18840	19200	18480
20400	20400	15120	13800	21000	19440	21840	23040	18600	13080	14160	21360	18840	19200	18960
20280	20280	15240	13800	21120	19560	22080	23160	18720	13080	14520	21480	18840	19320	18720
20400	20400	15360	13800	21360	20040	22560	23300	18840	12960	14400	21600	18720	19320	18600
20160	20160	15480	13920	21240	19920	22560	22800	18600	13200	14760	21760	18720	19440	18960
20040	20040	15360	13920	21000	19920	22440	22680	18360	12840	14880	21920	18360	19320	18600
20160	20160	15600	13800	21120	20160	22440	23160	18480	13080	15240	22040	18240	19320	18480
178530	178530	155670	142320	179820	176610	189690	200640	176970	143520	145650	191010	168810	168570	170880

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

JULY 1995
BILLING-ID: 1100
TRANS PERIOD FROM: 06/01 TO: 06/30
BILLING GROUP: W
ROUTE: 9726 FOLIO: 6940
TARIFF SCHEDULE: P

DEMAND BILLING - ELECTRIC
DEMANDS AS TRANSLATED AND TOTALED

NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

DATE: 07/03/
PAGE: 2

1/4 HOUR	06/01	06/02	06/03	06/04	06/05	06/06	06/07	06/08	06/09	06/10	06/11	06/12	06/13	06/14	06/15
ENDING	18960	20280	15600	13920	21240	20040	22680	23160	18720	12960	15480	19920	18480	19440	18480
12:15	19200	20040	15600	13920	21120	20160	22680	23040	18720	13080	15600	20040	18360	19440	18480
12:30	19320	20520	15720	14040	21360	20280	22800	23400	18840	13440	15720	20920	18480	19560	18480
12:45	19200	20640	15720	14160	21240	20160	22920	23280	19200	13440	15840	19800	18360	19800	18600
13:00	19560	21000	15720	13800	21480	20400	23160	23640	19560	13320	15960	20040	18360	20160	19080
13:15	19680	21120	15600	14040	21360	20520	23280	23640	19440	13320	15960	19800	18600	20400	19200
13:30	19680	21240	15600	14040	21360	20520	23040	23520	19560	13200	15960	19680	18600	20400	19200
13:45	19560	21360	15720	14040	21120	20280	23160	23760	19440	13200	16200	19680	18480	20400	19200
14:00	19800	21480	15600	14040	21360	20280	23160	23640	19320	13200	16320	19560	18480	20520	19200
14:15	19800	21360	15480	14160	21360	20280	23160	23640	19320	13200	16200	19320	18480	20400	19200
14:30	19800	21480	15240	14160	21120	20400	23520	23400	19440	13080	16440	19320	18480	20640	19200
14:45	19560	21000	15360	14280	21240	20160	23520	23400	18960	13080	16200	19200	18240	20640	19320
15:00	19320	21120	15360	13920	21240	20040	23280	23400	18840	13200	16200	19200	18120	20280	19200
15:15	19440	20520	15120	14040	21120	19800	23280	23280	18720	13200	16560	18840	17880	20520	19320
15:30	19320	20040	15240	14160	21000	19800	23040	22920	18120	13200	16560	18840	17520	20160	19080
15:45	19320	19560	15240	14040	20640	19680	22560	23040	17880	13200	16320	17880	17400	20040	19080
16:00	18600	18960	15240	13800	20040	19320	21960	22480	17520	13080	16560	17520	16920	19440	18840
16:15	18240	18120	15240	14040	19320	18720	21960	22480	17040	13440	16560	16680	16440	18600	17760
16:30	17280	17520	15240	13800	18000	17640	20160	19680	16320	13080	16440	15720	15600	17760	17040
16:45	16800	17040	15120	13920	17640	17160	19560	18960	15960	13320	16800	15000	15000	17160	16800
17:00	16560	16800	14880	13920	16920	16560	19080	18120	15720	13560	16560	14520	14640	16680	16320
17:15	16080	16560	15000	14040	16560	16200	18840	18000	15600	13320	16320	14400	14640	16440	16200
17:30	15960	16320	14640	14040	16200	16080	18480	17400	15360	13200	16320	14160	14400	16080	15840
17:45	15600	15960	14520	14040	16200	15840	18120	17520	15360	13200	16320	13800	14280	15720	15600
18:00	15240	15720	14040	14040	15720	15840	17760	16920	14880	12840	16200	13560	14040	15480	15360
18:15	14880	15240	14160	13800	15360	15360	17640	16800	15000	12960	15960	13680	13800	15000	15240
18:30	15000	15000	13800	13920	15360	15360	17640	16440	14640	12840	15960	13440	13800	14880	14680
18:45	14760	15120	13800	13680	14880	15240	17280	16440	14520	12720	15720	13320	13680	14760	14760
19:00	14400	14640	13440	13440	14520	15000	17040	16320	14160	12720	15840	13200	13560	14520	14760
19:15	14160	14520	13320	13440	14760	14640	16800	16200	13920	12480	15720	13080	13440	14400	14400
19:30	14160	14520	13320	13440	14760	14640	16800	15960	14040	12720	15720	13080	13440	14400	14400
19:45	14160	14400	13200	13560	14760	14400	16800	16320	13920	12600	15600	13200	13320	14160	14280
20:00	14160	14400	13200	13560	14640	14400	16800	16320	13920	12600	15600	13200	13320	14160	14280
20:15	14040	14280	13440	13440	14520	13920	16560	16680	13800	12720	15840	12960	13680	14040	13800
20:30	14040	14280	13440	13440	14520	13920	16560	16680	13800	12720	15840	12960	13680	14040	13800
20:45	14040	14280	13440	13440	14520	13920	16560	16680	13800	12720	15840	12960	13680	14040	13800
21:00	14040	14280	13440	13440	14520	13920	16560	16680	13800	12720	15840	12960	13680	14040	13800
21:15	13920	14280	13320	13920	14760	14520	16920	16800	14160	12960	15840	13080	13320	14400	14280
21:30	13920	14280	13320	13920	14760	14520	16920	16800	14160	12960	15840	13080	13320	14400	14280
21:45	13800	14040	13440	13680	14040	14040	16200	16440	13920	13080	15240	12960	13080	14160	13800
22:00	13560	14040	13200	13560	13800	13920	16200	16440	13680	12720	15000	12720	12960	13800	13680
22:15	13320	13920	13080	13200	13440	13800	15480	15480	13680	12720	14640	12720	12960	13800	13680
22:30	13200	13920	12960	13200	13440	13800	15480	15480	13680	12720	14640	12720	12960	13800	13680
22:45	12720	13680	12720	12840	13080	13320	15120	15240	13440	12720	14520	12240	12600	13560	13200
23:00	12600	13440	12600	12600	12840	13080	14880	14880	13320	12720	14040	12240	12120	13200	12840
23:15	12600	13440	12600	12600	12840	13080	14880	14880	13320	12720	14040	12240	12120	13200	12840
23:30	12360	13320	12480	12360	12720	12960	14280	14520	12960	12480	13680	12000	11880	12600	12240
23:45	12360	12960	12480	12360	12720	12960	14280	14520	12960	12480	13680	12000	11880	12600	12240
24:00	12120	13200	12000	12120	12600	12600	14040	13920	12720	12360	13560	11520	11400	12600	12120
PAGE TOT	194730	203220	171540	164580	205230	200460	229080	227760	191580	155550	188490	185250	181350	198900	192240
DAY TOT	194730	381750	327210	306900	385050	377070	418770	428400	368550	299070	334140	376260	350160	367470	363120

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

JULY 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 06/01 TO: 06/30

DEMAND BILLING - ELECTRIC

TOD DEMAND SUMMARY

DATE: 07/03,

PAGE: 1

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

TAX CLASS: 7 CITY/COUNTY CODE: 6

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

ON PEAK KW DATE TIME SUMMER KW 90%KVA DATE TIME NON - SUMMER KW

24840 JUN 21 14:45 24780 JUN 21 13:45 3974633 KWH

INT PEAK KW DATE TIME 22920 JUN 21 10:15 22800 JUN 08 10:15 22740 JUN 08 10:00

2085533 KWH OFF PEAK KW DATE TIME 18060 JUN 21 07:15 17160 JUN 21 07:00 17100 JUN 08 07:15

4642834 KWH 10703000 TOTAL SUMMER KWH

PROD & TRANS BILLING DEMAND IS 24840 KW JUN 21 14:45

DISTRIBUTION BILLING DEMAND IS 24840 KW JUN 21 14:45

THIS CUSTOMER HAS ELECTRIC RIDERS:

TRANSLATION HISTORY OF LAST 12 OCCURENCES												NON-SUMMER DATA				SUMMER DATA			
BILL DATE	BILL ADJ	BILL DATE	BILL ADJ	PROD DEM	DIST DEM	ON PEAK KWH	OFF PEAK KWH	INT PEAK KWH	INT PEAK KWH	ON PEAK KWH	OFF PEAK KWH	BILL DATE	BILL ADJ	PROD DEM	DIST DEM	TOTAL KWH	TOTAL KWH	ON PEAK KWH	OFF PEAK KWH
9506	YES	9506	YES	21240	21900	2551242	77665	51891	38004	167560	38004	9506	YES	19140	19140	167560	167560	2225313	4740885
9505	YES	9505	YES	20940	20940	2431866				9767000		9505	YES	20940	20940	9767000	9767000	1969209	5365925
9504	YES	9504	YES	23400	23400	2802634				10331000		9504	YES	23400	23400	10331000	10331000	2288892	5239474
9503	YES	9503	YES	26400	26020	3233728				12274000		9503	YES	26400	26020	12274000	12274000	2511655	6528617
9502	YES	9502	YES	23400	23400	2847093				10492000		9502	YES	23400	23400	10492000	10492000	2243296	5401611
9501	YES	9501	YES	21120	20760	2631487				10801000		9501	YES	21120	20760	10801000	10801000	2012328	6157185
9411	YES	9411	YES	19440	19440	2624416				9595000		9411	YES	19440	19440	9595000	9595000	2091784	4878800
9410	YES	9410	YES	17820	17820	2346967				8358000		9410	YES	17820	17820	8358000	8358000	1915178	4095855
9409	YES	9409	YES	17820	17820	68783				716066		9409	YES	17820	17820	716066	716066	30716	616567
9408	YES	9408	YES	17820	17820	4450096				4450096		9408	YES	17820	17820	4450096	4450096	2091784	4878800
9407	YES	9407	YES	17820	17820	5057406				5057406		9407	YES	17820	17820	5057406	5057406	1915178	4095855
9407	YES	9407	YES	17820	17820	6125033				6125033		9407	YES	17820	17820	6125033	6125033	30716	616567
9407	YES	9407	YES	17820	17820	4840733				4840733		9407	YES	17820	17820	4840733	4840733	30716	616567

ADDITIONAL LISTING 1

40:11:15.8

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

SEPTEMBER 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 08/02 TO: 08/31

DEMAND BILLING - ELECTRIC
ELECTRIC - METER TRANSLATION SUMMARY REPORT

DATE: 09/01/
PAGE: 1

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

TAX CLASS: 7 CITY/COUNTY CODE: 6

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

LODESTAR CUSTID	CH	MT	SI	START TIME	STOP TIME	METER NUMBER	START INDEX	STOP INDEX	METER MULTIPLIER	METERED USE
1100011	1	1		08/02/95-01:01	08/31/95-01:29	50946244	97921.0	3531.0	1000.000000	5610000.0
1100012	2	1		08/02/95-01:01	08/31/95-01:29	50961016	83604.0	90409.0	1000.000000	6805000.0

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

SEPTEMBER 1995

DEMAND BILLING - ELECTRIC
TRANSLATION CONTROL SUMMARYDATE: 09/01/
PAGE: 1

TRANS PERIOD FROM: 08/02 TO: 08/31

BILLING GROUP: W

NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

CITY: ABERDEEN

STATE: MD ZIP: 21005

TAX CLASS: 7 CITY/COUNTY CODE: 6

RECORDER ID: 110001

CHAN	PULSE CONST	MT ST	METERED USE	TRANSLATED USE	PERCENTAGE DIFF	START TIME	END TIME	EXPECTED NO INTERVALS
1	30.000000	1	5610000	5610120	0.00214	08/02/95-01:01	08/31/95-01:30	2786
2	30.000000	1	6805000	6805110	0.00162	RECORDED STOP TIME - 01:29	RECORDED NO INTERVALS	2786
						DAY OF WEEK - 4	MISSING NO INTERVALS	0

DATE	PULSES				CONSUMPTION				TOTAL KWH
	CHAN 1 PULSES	CHAN 2 PULSES	CHAN 3 PULSES	CHAN 4 PULSES	CHAN 1 KWH	CHAN 2 KWH	CHAN 3 KWH	CHAN 4 KWH	
08/02/95	7282	8984			218460.0	269520.0			487980.0
08/03/95	7467	9169			224010.0	275070.0			499080.0
08/04/95	7400	8592			222000.0	257760.0			479760.0
08/05/95	6457	6949			193710.0	208470.0			402180.0
08/06/95	5749	6233			172470.0	186990.0			359460.0
08/07/95	5906	7271			177180.0	218130.0			395310.0
08/08/95	5867	7418			176010.0	222540.0			398550.0
08/09/95	6072	7777			182160.0	233310.0			415470.0
08/10/95	6487	7907			194610.0	237210.0			431820.0
08/11/95	6641	8110			199230.0	243300.0			442530.0
08/12/95	6134	7058			184020.0	211740.0			395790.0
08/13/95	6216	6977			186480.0	209310.0			476340.0
08/14/95	7074	8804			212220.0	264120.0			474360.0
08/15/95	7066	8746			211980.0	262380.0			483810.0
08/16/95	7175	8952			215250.0	268560.0			502830.0
08/17/95	7454	9307			223620.0	279210.0			468180.0
08/18/95	7079	8527			212370.0	255810.0			377640.0
08/19/95	5881	6707			176430.0	201210.0			351630.0
08/20/95	5417	6304			162510.0	189120.0			437910.0
08/21/95	6479	8118			194370.0	243540.0			448290.0
08/22/95	6687	8256			200610.0	247680.0			419310.0
08/23/95	6182	7795			185460.0	233850.0			449790.0
08/24/95	6553	8440			196590.0	253200.0			406890.0
08/25/95	6023	7540			180690.0	226200.0			332940.0
08/26/95	5201	5897			156030.0	176910.0			356070.0
08/27/95	5598	6271			167940.0	188130.0			433650.0
08/28/95	6334	8121			190020.0	243630.0			429030.0
08/29/95	6299	8002			188970.0	240060.0			441900.0
08/30/95	6514	8216			195420.0	246480.0			20970.0
08/31/95	310	389			9300.0	11670.0			
TOTAL	187004	226837			5610120.0	6805110.0			12415230.0

TGL310

*** THE LODGESTAR BILLING INTERFACE (REL. 1.01) ***

SEPTEMBER 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 08/02 TO: 08/31

DEMAND BILLING - ELECTRIC
TRANSLATION CONTROL - TOD USAGE SUMMARY

DATE: 09/01
PAGE: 1

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

TAX CLASS: 7 CITY/COUNTY CODE: 6

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

RECORDER ID: 110001

ADJUSTMENT OF TRANSLATION TO METER READINGS

CHAN	TRANS TOTAL	TRANSLATED USAGE BY ON INT	TRANSLATED PERCENTAGES ON INT	METER TOTAL	METERED USAGE BY ON INT	PEAKS OFF
1	5610120 SUM NON	2051190 1055220 2503710	36.5623 18.8092 44.6285	5610000	SUM 2051145 1055196 NON	2503659
2	6805110 SUM NON	2553120 1311630 2940360	37.5176 19.2741 43.2083	6805000	SUM 2553073 1311603 NON	2940324

MAX 60 MIN DEMAND SUMMARY

CHAN	DATE	TIME	DEMAND
1	08/02/95	13:00	11670
2	08/02/95	15:00	15210

TGL310

SEPTEMBER 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 08/02 TO: 08/31

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

1/4 HOUR

ENDING

THE

LODESTAR

BILLING

INTERFAC

REL. 1.01

DEMAND BILLING - ELECTRIC

DEMANDS AS TRANSLATED AND TOTALLED

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

DATE: 09/01,

PAGE: 1

08/02

08/03

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TGL310

SEPTEMBER 1995
BILLING-ID: 1100
TRANS PERIOD FROM: 08/02 TO: 08/31
BILLING GROUP: W
ROUTE: 9726 FOLIO: 6940
TARIFF SCHEDULE: P

1/4 HOUR
ENDING

08/02	08/03	08/04	08/05	08/06	08/07	08/08
26160	25440	24480	18840	15480	20160	20520
26280	25560	24360	19080	15480	20160	20760
26400	25560	24360	19080	15600	20520	20640
26640	25920	24720	19080	15480	20640	20760
26760	25680	24600	19320	15600	20760	20880
26880	26040	24600	19200	15600	21000	21600
26760	26400	24480	19440	15600	21000	21720
26880	26280	24360	19440	15600	20760	21480
26880	26160	24600	19440	15720	21120	21840
26880	26520	24480	19440	15840	21240	21960
26760	26400	24600	19440	15960	21000	21840
26880	26400	24600	19440	15960	20880	22080
26760	26400	24240	19080	16200	21960	22200
26640	26160	24240	18960	16320	21000	22200
26400	26160	23880	18840	16440	20520	21720
25920	25440	23640	18480	16320	20400	21480
25440	24960	23040	18480	16560	19680	21000
24440	24120	22440	18240	16440	19200	20940
23520	23280	21960	17400	16200	18000	18960
22920	22800	21480	17280	15960	17520	18480
22440	22200	21240	17160	15960	17640	18120
22080	22080	20880	17160	15720	17640	17640
21600	21600	20640	17160	15720	17520	17520
21480	21360	20640	16800	15600	17280	17400
21240	20880	20280	16680	15600	17280	17280
21000	20760	20040	16800	15240	17160	17160
20880	20640	20040	16560	15240	17160	16800
20400	20160	19680	16440	15120	16800	16560
20280	19920	19560	16320	15000	16320	16320
19800	19800	19320	16200	15000	16080	16080
19560	19320	19080	16200	15000	15960	15960
19440	19200	19200	16200	15000	15600	15600
19560	19440	19200	16320	15120	15000	14880
19800	19680	19200	16800	15240	15120	14880
19680	19560	19200	16680	15240	15120	14880
19440	19320	18960	16560	15240	14760	14640
19320	18960	18720	16440	15120	14640	14640
19200	18840	18480	16200	14760	14400	14400
18600	18600	18480	16200	14760	14280	14280
18720	18480	18120	16200	14520	14040	14040
18120	17760	18000	16200	14280	13920	14000
17880	17760	17400	16080	14160	13800	13800
17640	17520	17160	15960	13920	13560	13560
17280	17160	16800	15720	13800	13080	13080
17160	16800	16320	15480	13440	12960	12960
268200	264270	253290	209490	184140	205920	215820
487980	499080	479760	402180	359460	395310	398550

PAGE TOT
DAY TOT

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

DEMAND BILLING - ELECTRIC
DEMANDS AS TRANSLATED AND TOTALLED

NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

08/09	08/10	08/11	08/12	08/13	08/14	08/15
21360	21600	23040	18000	17760	24720	24000
21600	22080	23400	18360	17760	25200	24000
21600	22080	23400	18360	18000	25200	24120
21960	22080	23640	18480	18000	25200	24360
21840	22080	23760	18720	17880	25320	24600
21840	22080	23760	18960	17880	25560	24720
21960	22200	23880	18840	17880	25680	25200
22080	22320	23760	18840	18000	26040	25080
22080	22200	234000	19080	18120	26160	24720
22320	22200	23640	19200	18120	26160	24960
22440	22440	23640	18840	18120	26280	25080
22560	22440	23640	18960	18120	26160	25080
22440	22320	23400	19080	18000	26280	25080
22200	22320	22800	18960	18240	26160	25200
21840	22200	22440	18840	18360	26040	24480
21600	21840	22320	18840	18240	25680	24240
21360	21600	221480	18960	18480	25200	23880
20400	21360	21000	18600	18240	24360	22920
19680	20640	20520	18720	18120	23520	22200
19200	20160	19920	18360	18240	22680	21720
18360	20040	19680	18360	18360	22080	21000
18000	19800	19440	18840	18240	21960	20880
17640	19440	19200	18840	18360	21600	20760
17520	19320	18720	18720	18240	21360	20400
17280	19080	18600	18480	18120	21120	20160
17160	18840	18600	18600	18120	21000	20160
17280	18840	18360	18240	18240	20520	19560
17160	18480	18000	18000	17880	20400	19200
16800	18360	17760	18120	17520	20040	19080
16560	18120	17640	17880	17640	20040	19080
16320	17640	17040	17640	17640	19560	18480
16320	17400	16920	17640	17160	19560	18480
16680	17520	17040	17640	17160	19560	18600
16560	17760	17160	17880	17520	19560	18840
16440	17640	16920	17880	17400	19320	18720
16560	17640	16920	17880	17280	19200	18360
16560	17640	16920	17880	17400	18960	18240
16320	17160	16800	17520	17160	18720	18240
15960	16920	16560	17400	16800	18360	17640
15720	16920	16560	17400	16560	18360	17640
15600	16680	16440	17160	16440	17880	17520
15480	16440	16200	16920	16200	17880	17040
15240	16200	16080	16680	15960	17520	16800
15120	16200	15960	16680	15600	17520	16800
14880	16200	15960	16680	15600	17520	16560
14640	16200	15960	16680	15600	17520	16440
14400	16200	15960	16680	15600	17520	16440
14280	16200	15960	16680	15600	17520	16440
14040	16200	15960	16680	15600	17520	16440
13920	16200	15960	16680	15600	17520	16440
13800	16200	15960	16680	15600	17520	16440
13560	16200	15960	16680	15600	17520	16440
13320	16200	15960	16680	15600	17520	16440
13080	16200	15960	16680	15600	17520	16440
12960	16200	15960	16680	15600	17520	16440
205920	233280	234960	217500	210330	261870	250680
395310	431820	442530	395760	395790	476340	474360

DATE: 09/01/
PAGE: 2

TGL310

*** THE LODESTAR BILLING INTERFAC (REL. 1.01) ***

SEPTEMBER 1995

BILLING-ID: 1100

TRANS PERIOD FROM:

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

1/4 HOUR

ENDING

08/17

08/18

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TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

SEPTEMBER 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 08/02 TO: 08/31

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

1/4 HOUR 08/17

ENDING

12:15 25920

12:30 26160

12:45 26040

13:00 26280

13:15 26520

13:30 26520

13:45 26760

14:00 26520

14:15 26640

14:30 26400

14:45 26280

15:00 26160

15:15 26400

15:30 26160

15:45 26040

16:00 25680

16:15 25320

16:30 24480

16:45 23640

17:00 22680

17:15 22200

17:30 22080

17:45 21840

18:00 21600

18:15 21360

18:30 21000

18:45 20640

19:00 20280

19:15 20040

19:30 19920

19:45 19680

20:00 19200

20:15 19680

20:30 19920

20:45 19680

21:00 19320

21:15 19320

21:30 19080

21:45 18720

22:00 18480

22:15 18240

22:30 18000

22:45 17880

23:00 17280

23:15 17280

23:30 17160

23:45 16920

24:00 16680

24:15 265560

24:30 502830

PAGE TOT

DAY TOT

NAME: USA ABERDEEN

PROVING GROUND

CITY: ABERDEEN

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TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

SEPTEMBER 1995

DATE: 09/01/
PAGE: 1

DEMAND BILLING - ELECTRIC
TOD DEMAND SUMMARY

BILLING-ID: 1100
TRANS PERIOD FROM: 08/02 TO: 08/31

BILLING GROUP: W

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

CITY: ABERDEEN

STATE: MD ZIP: 21005

TAX CLASS: 7 CITY/COUNTY CODE: 6

ON PEAK KW DATE TIME 90%KVA DATE TIME SUMMER KW ----- NON - SUMMER KW -----

26880 AUG 02 14:15
26880 AUG 02 14:30
26820 AUG 02 13:30

4604218 KWH
INT PEAK KW DATE TIME 90%KVA DATE TIME
25380 AUG 02 10:15
25380 AUG 17 10:15
25260 AUG 17 10:00

2366799 KWH
OFF PEAK KW DATE TIME 90%KVA DATE TIME
19620 AUG 17 07:15
19440 AUG 05 14:00
19440 AUG 05 14:15

5443983 KWH
12415000 TOTAL SUMMER KWH
PROD & TRANS BILLING DEMAND IS 26880 KW AUG 02 14:15
DISTRIBUTION BILLING DEMAND IS 26880 KW AUG 02 14:15

THIS CUSTOMER HAS ELECTRIC RIDERS:

TRANSLATION HISTORY OF LAST 12 OCCURENCES												NON-SUMMER DATA			
BILL DATE	BILL ADJ	PROD DEM	DIST DEM	BILL DATE	OFF PEAK KWH	INT PEAK KWH	ON PEAK KWH	BILL ADJ	PROD DEM	DIST DEM	TOTAL KWH	ON PEAK KWH	INT PEAK KWH	OFF PEAK KWH	PEAK KWH
9508	YES	27180	27180	9507	6455817	2422091	4802092	YES	20940	20940	9517440	2551242	2225313	4740885	
9507	YES	24840	24840	9506	4642834	2085533	3974633	YES	23400	23400	9767000	2431866	1969209	5365925	
9506	YES	19140	19140	9505	77665	51891	38004	YES	26400	26020	10331000	2802634	2288892	5239474	
9505				9504				YES	23400	23400	12274000	3233728	2511655	6528617	
9504				9503				YES	23400	23400	10492000	2847093	2243296	5401611	
9502				9502				YES	21120	20760	10801000	2631487	2012328	6157185	
9501				9501				YES	19440	19440	9595000	2624416	2091784	4878800	
9412				9412				YES	17700	17700	8358000	2346967	1915178	4095855	
9410				9410				YES	17820	17820	716066	68783	30716	616567	
9409				9409											

ADDITIONAL LISTING 1

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

OCTOBER 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 08/31 TO: 10/02

DEMAND BILLING - ELECTRIC
ELECTRIC - METER TRANSLATION SUMMARY REPORT

DATE: 10/02/
PAGE: 1

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

TAX CLASS: 7 CITY/COUNTY CODE: 6

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

LODESTAR CUSTID	CH	MT	SI	START TIME	STOP TIME	METER NUMBER	START INDEX	STOP INDEX	METER MULTIPLIER	METERED USE
1100011	1	1		08/31/95-01:31	10/02/95-00:59	50946244	3531.0	8743.0	1000.000000	5212000.0
1100012	2	1		08/31/95-01:31	10/02/95-00:59	50961016	90409.0	96427.0	1000.000000	6018000.0

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

OCTOBER 1995

BILLING-ID: 1100 DEMAND BILLING - ELECTRIC

DATE: 10/02/

PAGE: 1

TRANS PERIOD FROM: 08/31 TO: 10/02

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940 SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

TARIFF SCHEDULE: P

CITY: ABERDEEN

STATE: MD ZIP: 21005

TAX CLASS: 7 CITY/COUNTY CODE: 6

RECORDER ID: 110001

CHAN	PULSE	MT	METERED	TRANSLATED	PERCENTAGE	START TIME	END TIME	EXPECTED NO	INTERVALS:
	CONST	ST	USE	USE	DIFF			INSERTED NO	INTERVALS:
1	30.000000	1	5212000	5212260	0.00499	08/31/95-01:31	10/02/95-01:00	RECORDED NO <td>INTERVALS:</td>	INTERVALS:
2	30.000000	1	6018000	6018330	0.00548	START - DAY OF WEEK - 5	STOP TIME - 00:59	MISSING NO <td>INTERVALS:</td>	INTERVALS:

		PULSES				CONSUMPTION					
DATE	CHAN 1	CHAN 2	CHAN 3	CHAN 4	TOTAL	CHAN 1	CHAN 2	CHAN 3	CHAN 4	TOTAL	
08/31/95	6327	7863			14190	189810.0	235890.0			425700.0	KWH
09/01/95	6457	7060			13517	193710.0	211800.0			405510.0	
09/02/95	5168	5640			10808	155040.0	169200.0			324240.0	
09/03/95	4925	5392			10317	147750.0	161760.0			309510.0	
09/04/95	5165	5580			10745	154950.0	167400.0			322350.0	
09/05/95	6302	7766			14068	189060.0	232980.0			422040.0	
09/06/95	6457	7950			14407	193710.0	238500.0			432210.0	
09/07/95	6473	7990			14463	194190.0	239700.0			433890.0	
09/08/95	6316	7747			14063	189480.0	232410.0			421890.0	
09/09/95	5805	6375			12180	174150.0	191250.0			365400.0	
09/10/95	4915	5536			10451	147450.0	166080.0			313530.0	
09/11/95	5264	6281			11545	157920.0	188430.0			346350.0	
09/12/95	5433	6459			11892	162990.0	193770.0			356760.0	
09/13/95	6164	7593			13757	184920.0	227790.0			412710.0	
09/14/95	6550	8149			14699	196500.0	244470.0			440970.0	
09/15/95	5618	6718			12336	168540.0	201540.0			370080.0	
09/16/95	4771	5273			10044	143130.0	158190.0			301320.0	
09/17/95	4793	5116			9909	143790.0	153480.0			297270.0	
09/18/95	5439	6508			11947	163170.0	195240.0			358410.0	
09/19/95	5345	6480			11825	160350.0	194600.0			354750.0	
09/20/95	5619	6840			12459	168570.0	205200.0			373770.0	
09/21/95	5982	7272			13254	179460.0	218160.0			397620.0	
09/22/95	5797	6847			12644	173910.0	205410.0			379320.0	
09/23/95	4491	4701			9192	134730.0	141030.0			273150.0	
09/24/95	4484	4621			9105	134520.0	138630.0			275760.0	
09/25/95	5053	5857			10910	151590.0	175710.0			327300.0	
09/26/95	4890	5763			10653	146700.0	172890.0			319590.0	
09/27/95	4964	5754			10718	148920.0	172620.0			321540.0	
09/28/95	5076	5805			10881	152280.0	174150.0			326430.0	
09/29/95	4810	5097			9907	144300.0	152910.0			297210.0	
09/30/95	4400	4258			8658	132000.0	127740.0			259740.0	
10/01/95	4334	4154			8488	130020.0	124620.0			254640.0	
10/02/95	155	166			321	4650.0	4980.0			9630.0	
TOTAL	173742	200611			374353	5212260.0	6018330.0			11230590.0	

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

OCTOBER 1995

BILLING-ID: 1100

DEMAND BILLING - ELECTRIC
TRANSLATION CONTROL - TOD USAGE SUMMARY

TRANS PERIOD FROM: 08/31 TO: 10/02

DATE: 10/02/
PAGE: 1

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

TARIFF SCHEDULE: P

CITY: ABERDEEN

STATE: MD ZIP: 21005

TAX CLASS: 7 CITY/COUNTY CODE: 6

RECORDER ID: 110001
ADJUSTMENT OF TRANSLATION TO METER READINGS

CHAN	TRANS TOTAL	TRANSLATED		USAGE BY PEAKS		TRANSLATED PERCENTAGES		METER TOTAL	METERED USAGE BY PEAKS				
		ON	OFF	INT	OFF	ON	INT		OFF				
1	5212260	SUM NON	1748940 0	926430 0	2402220 134670	33.5543 0.0000	17.7740 0.0000	46.0878 2.5839	5212000	SUM NON	1748850 0	926381 0	2402096 134673
2	6018330	SUM NON	2105340 0	1091610 0	2691780 129600	34.9821 0.0000	18.1380 0.0000	44.7263 2.1536	6018000	SUM NON	2105223 0	1091545 0	2691629 129603

MAX 60 MIN DEMAND SUMMARY

CHAN	DATE	TIME	DEMAND
1	08/31/95	16:00	10560
2	08/31/95	14:00	13860

TGL310

OCTOBER 1995
BILLING-ID: 1100
TRANS PERIOD FROM: 08/31 TO: 10/02
BILLING GROUP: W
ROUTE: 9726 FOLIO: 6940
TARIFF SCHEDULE: P
1/4 HOUR 09/30 10/01 10/02

ENDING
00:15 10320 10320 9600
00:30 10440 9960 9720
00:45 10080 10080 9720
01:00 10080 9840 9480
01:15 10080 9720 9480
01:30 9840 9720 9480
01:45 9960 9480 9600
02:00 9840 9600 9600
02:15 9960 9720 9480
02:30 9840 9480 9480
02:45 9720 9480 9480
03:00 9720 9480 9480
03:15 9720 9360 9360
03:30 9720 9480 9360
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04:00 9720 9480 9360
04:15 9720 9360 9600
04:30 9720 9480 9360
04:45 9480 9360 9480
05:00 9720 9360 9480
05:15 9840 9480 9360
05:30 9840 9360 9360
05:45 9720 9360 9360
06:00 9960 9360 9600
06:15 9960 9600 9600
06:30 10200 9600 9720
06:45 10200 9720 9600
07:00 9960 9600 9360
07:15 9960 9360 9480
07:30 10080 9600 9600
07:45 10200 9600 9720
08:00 10320 9720 9840
08:15 10800 9840 10080
08:30 10920 10320 10320
08:45 10920 10440 10440
09:00 10920 10560 10800
09:15 11160 10800 10800
09:30 11520 10800 10920
09:45 11280 10920 11040
10:00 11400 11040 11160
10:15 11520 11160 11400
10:30 11520 11520 11520
10:45 11640 11640 11640
11:00 11520 11520 11520
11:15 11640 11640 11640
11:30 11760 11760 11760
11:45 11760 11760 11760
12:00 11760 119940 9630

PAGE TOT

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

DEMAND BILLING - ELECTRIC
DEMANDS AS TRANSLATED AND TOTALED

NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

DATE: 10/02/5
PAGE: 5

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

OCTOBER 1995
BILLING-ID: 1100
TRANS PERIOD FROM: 08/31 TO: 10/02
BILLING GROUP: W
ROUTE: 9726 FOLIO: 6940
TARIFF SCHEDULE: P

DATE: 10/02
PAGE: 6

NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN STATE: MD ZIP: 21005

10/02

1/4 HOUR 09/30 10/01 10/02

ENDING	11760	11400	
12:15	11640	11280	
12:30	11760	11520	
12:45	11520	11280	
13:00	11520	11520	
13:15	11640	11520	
13:30	11520	11640	
13:45	11640	11280	
14:00	11400	11400	
14:15	11400	11280	
14:30	11280	11160	
14:45	11280	11400	
15:00	11520	11280	
15:15	11400	11400	
15:30	11400	11280	
15:45	11280	11400	
16:00	11280	11280	
16:15	11400	11400	
16:30	11160	11400	
16:45	11520	11280	
17:00	11400	11400	
17:15	11520	11160	
17:30	11400	11280	
17:45	11280	11280	
18:00	11160	11160	
18:15	11040	11280	
18:30	11040	11160	
18:45	11160	11400	
19:00	11160	11600	
19:15	11160	11760	
19:30	11640	12000	
19:45	11520	12000	
20:00	11520	11880	
20:15	11640	12000	
20:30	11520	11880	
20:45	11280	11520	
21:00	11400	11400	
21:15	11280	11520	
21:30	11160	11400	
21:45	11040	11040	
22:00	11040	11040	
22:15	11040	10680	
22:30	10800	10440	
22:45	10560	10560	
23:00	10560	10200	
23:15	10320	10080	
23:30	10320	10080	
23:45	10200	9960	
24:00	10200	9840	
PAGE TOT	134850	134700	0
DAY TOT	259740	254640	9630

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

OCTOBER 1995

DEMAND BILLING - ELECTRIC

DATE: 10/02/
PAGE: 1

BILLING-ID: 1100

TOD DEMAND SUMMARY

TRANS PERIOD FROM: 08/31 TO: 10/02

BILLING GROUP: W

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

CITY: ABERDEEN

STATE: MD ZIP: 21005

TAX CLASS: 7 CITY/COUNTY CODE: 6

ON PEAK			SUMMER KW			NON -			SUMMER KW		
DATE	KW	TIME	DATE	90%KVA	TIME	DATE	DATE	TIME	DATE	90%KVA	TIME
24360	24360	13:145	AUG 31	13:145							
24360	24360	14:00	AUG 31	14:00							
24360	24360	15:00	AUG 31	15:00							
3854073 KWH											
INT PEAK			TIME			DATE			DATE		
22560	22560	10:15	SEP 14	10:15							
22260	22260	10:00	SEP 14	10:00							
22080	22080	10:15	SEP 07	10:15							
2017926 KWH											
OFF PEAK			TIME			DATE			DATE		
17940	17940	07:15	SEP 14	07:15							
17160	17160	07:00	SEP 14	07:00							
17100	17100	12:30	SEP 09	12:30							
5093725 KWH											
10965724 TOTAL SUMMER KWH											
PROD & TRANS BILLING DEMAND IS 24360 KW AUG 31 13:45											
DISTRIBUTION BILLING DEMAND IS 24360 KW AUG 31 13:45											
DISTRIBUTION BILLING DEMAND IS 12000 KW OCT 01 19:45											

THIS CUSTOMER HAS ELECTRIC RIDERS:

TRANSLATION HISTORY OF LAST 12 OCCURENCES											
SUMMER DATA						NON-SUMMER DATA					
BILL DATE	BILL ADJ	PROD DEM	DIST DEM	TOTAL KWH	ON PEAK KWH	INT PEAK KWH	OFF PEAK KWH	BILL DATE	BILL ADJ	PROD DEM	DIST DEM
9509	YES	26880	26880	12415000	4604218	2366799	5443983	9509	YES	20940	20940
9508	YES	27180	27180	13680000	4802092	2422091	6455817	9508	YES	23400	23400
9507	YES	24840	24840	10703000	3974633	2085533	4642834	9507	YES	26400	26020
9506	YES	19140	19140	167560	38004	51891	77665	9506	YES	23400	23400
9505								9505	YES	21240	21900
9504								9504	YES	20940	20940
9503								9503	YES	23400	23400
9502								9502	YES	26400	26020
9501								9501	YES	23400	23400
9412								9412	YES	21120	20760
9411								9411	YES	19440	19440
9410	YES	22560	22560	10255934	3844220	1961618	4450096	9410	YES	17700	17700
ADDITIONAL LISTING 1						1961618	4450096				
								9517440	2551242	2225313	4740885
								9767000	2431866	1969209	5365925
								10331000	2802634	2288892	5239474
								12274000	3233728	2511655	6528617
								10492000	2847093	2243296	5401611
								10801000	2631487	2012328	6157185
								9595000	2624416	2091784	4878800
								8358000	2346967	1915178	4095855
								716066	68783	30716	616567

NOVEMBER 1995
 BILLING-ID: 1100
 TRANS PERIOD FROM: 10/02 TO: 10/31

DEMAND BILLING - ELECTRIC
 TRANSLATION CONTROL SUMMARY

BILLING GROUP: W NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA
 ROUTE: 9726 FOLIO: 6940 CITY: ABERDEEN STATE: MD ZIP: 21005
 TAX CLASS: 7 CITY/COUNTY CODE: 6
 RECORDER ID: 110001

CHAN	DATE	PULSE CONST	MT ST	METERED USE	TRANSLATED USE	PERCENTAGE DIFF	START TIME END TIME	NO INTERVALS: NO INTERVALS:	NO INTERVALS: NO INTERVALS:	NO INTERVALS: NO INTERVALS:	TOTAL KWH
1	10/02/95	30.000000	1	3827000	3827010	0.00026	10/02/95-01:01	2789	0	0	314640.0
2	10/03/95	30.000000	1	4954000	4954530	0.01070	10/31/95-01:15	2789	0	0	333090.0
	10/04/95						RECORDED STOP TIME - 01:14				342510.0
	10/05/95						MISSING NO INTERVALS: 2				355470.0
	10/06/95										369750.0
	10/07/95										295800.0
	10/08/95										259770.0
	10/09/95										255600.0
	10/10/95										325260.0
	10/11/95										341520.0
	10/12/95										340050.0
	10/13/95										310890.0
	10/14/95										259500.0
	10/15/95										241350.0
	10/16/95										300030.0
	10/17/95										312570.0
	10/18/95										312390.0
	10/19/95										312660.0
	10/20/95										308190.0
	10/21/95										245040.0
	10/22/95										233250.0
	10/23/95										312030.0
	10/24/95										314760.0
	10/25/95										307170.0
	10/26/95										313860.0
	10/27/95										302520.0
	10/28/95										260580.0
	10/29/95										267900.0
	10/30/95										320100.0
	10/31/95										13290.0
TOTAL		127567	165151		292718						8781540.0

4954530.0

3827010.0

292718

LODESTAR CUSTID	CH	MT	SI	START TIME	STOP TIME	METER NUMBER	START INDEX	STOP INDEX	METER MULTIPLIER	METERED USE
1100011	1	1	1	10/02/95-01:01	10/31/95-01:14	50946244	8743.0	12570.0	1000.000000	3827000.0
1100012	2	1	1	10/02/95-01:01	10/31/95-01:14	50961016	96427.0	1381.0	1000.000000	4954000.0

TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

NOVEMBER 1995

BILLING-ID: 1100

TRANS PERIOD FROM: 10/02 TO: 10/31

DEMAND BILLING - ELECTRIC
TRANSLATION CONTROL - TOD USAGE SUMMARY

DATE: 11/09/
PAGE: 1

BILLING GROUP: W

ROUTE: 9726 FOLIO: 6940

TARIFF SCHEDULE: P

TAX CLASS: 7 CITY/COUNTY CODE: 6

NAME: USA ABERDEEN PROVING GROUND

SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN

STATE: MD ZIP: 21005

RECORDER ID: 110001
ADJUSTMENT OF TRANSLATION TO METER READINGS

CHAN	TRANS TOTAL	TRANSLATED ON	TRANSLATED INT	TRANSLATED ON	TRANSLATED INT	PERCENTAGES OFF	METER TOTAL	METERED ON	USAGE BY INT	PEAKS OFF
1	3827010	SUM	852690	1907820	27.8677	22.2808	3827000	SUM	852686	1907317
		NON	1066500			49.8515		NON	1066497	
2	4954530	SUM	1354500	2427780	27.3386	23.6601	4954000	SUM	1354354	2427525
		NON			49.0013			NON	1172121	

MAX 60 MIN DEMAND SUMMARY

CHAN	DATE	TIME	DEMAND
1	10/06/95	14:00	9270
2	10/06/95	14:00	11040

BILLING - ID: 190										DEMANDS AS TRANSFERRED AND TOGALED										SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA										STATE: MD ZIP: 21005																																																																																																													
TRANS PERIOD FROM: 10/02 TO: 10/31										NAME: USA ABERDEEN PROVING GROUND										CITY: ABERDEEN										F																																																																																																													
BILLING GROUP: W										ROUTE: 9726 ED 10: 6940										TARIFF SCHEDULE: P																																																																																																																							
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TGL310

*** THE LODESTAR BILLING INTERFACE (REL. 1.01) ***

DATE: 11/09/
PAGE: 5

NOVEMBER 1995
BILLING-ID: 1100
TRANS PERIOD FROM: 10/02 TO: 10/31
BILLING GROUP: W
ROUTE: 9726 FOLIO: 6940
TARIFF SCHEDULE: P
1/4 HOUR 10/31

DEMAND BILLING - ELECTRIC
DEMANDS AS TRANSLATED AND TOTALED

NAME: USA ABERDEEN PROVING GROUND SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA

CITY: ABERDEEN STATE: MD ZIP: 21005

ENDING
00:15 10920
00:30 10560
00:45 10680
01:00 10560
01:15 10440
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NOVEMBER 95
BILLING - ID: 1100
TRANS PERIOD FROM: 10/02 TO: 10/31
BILLING GROUP: W
ROUTE: 9726 FOLIO: 6940
TARIFF SCHEDULE: P
1/4 HOUR 10/31
ENDING
12:15
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DEMAND BILLING - ELECTRIC
DEMANDS AS TRANSLATED AND TOTALED
NAME: USA ABERDEEN PROVING GROUND
SERVICE ADDR: 5600 MARYLAND BLVD *SECT AA
CITY: ABERDEEN
STATE: MD ZIP: 21005

ATTACHMENT 8.5
METERING DATA

Aberdeen Proving Grounds

Substation #	2A				2B		15	24	36		
Feeder #	2	4	6	7	1	2	4			1	
BUILDING'S SERVED											
Building #'s										Pole #45	
TEST TIME & DATE											
Date	10/20/95		10/17/95	10/17/95	10/17/95	10/20/95		10/17/95	10/18/95	10/17/95	10/18/95
Time Test Started	09:55 AM		11:02 AM	11:32 AM	01:01 PM	10:12 AM		01:10 PM	11:18 AM	01:45 PM	09:48 AM
Time Test Ended	10:00 AM		09:00 AM	09:02 AM	09:00 AM	10:00 AM		09:37 AM	10:30 PM	11:30 AM	11:55 AM
TEMPERATURES											
High Temperature	71		63	63	63	71		63	73	63	75
Low Temperature	49		42	42	42	49		42	47	42	54
Relative Humidity (RH)	100%		58%	58%	58%	100%		58%	61%	58%	68%
ELECTRIC USAGE											
On-Peak kWh	3,398		737	239	104	871		1,225	80	1,228	4,342
Interm kWh	1,746		963	336	177	627		808	84	929	1,570
Off-Peak kWh	2,222		936	325	86	1,020		1,871	83	559	1,834
Total kWh	7,366		2,636	900	367	2,518		3,904	247	2,716	7,746
DEMAND READINGS											
12:00 AM (Midnight)	221		88	33	6	103		173	8	49	181
12:30 AM	209		90	31	4	100		178	8	46	180
01:00 AM	210		90	31	8	102		175	8	45	176
01:30 AM	212		90	31	8	101		183	8	53	179
02:00 AM	207		92	31	6	101		187	8	46	178
02:30 AM	208		91	31	6	103		190	8	43	177
03:00 AM	213		89	31	6	102		193	8	52	179
03:30 AM	212		90	30	7	101		190	8	50	180
04:00 AM	214		89	30	7	102		190	8	43	177
04:30 AM	213		90	34	9	100		175	8	53	182
05:00 AM	211		90	31	10	95		186	8	46	184
05:30 AM	205		90	30	12	92		186	8	55	188
06:00 AM	205		100	29	15	93		195	8	72	190
06:30 AM	208		116	33	17	94		198	8	85	216
07:00 AM	214		144	35	18	99		193	12	194	240
07:30 AM	216		157	40	24	96		164	12	316	251
08:00 AM	233		159	40	33	102		165	13	375	256
08:30 AM	236		163	43	37	109		167	14	382	258
09:00 AM	240		165	45	39	108		172	13	380	269
09:30 AM	249		166	46	40	109		194	13	381	267
10:00 AM	250		168	47	41	103		195	14	385	265
10:30 AM	304		170	48	42	104		196	14	390	265
11:00 AM	309		172	49	39	138		197		15 385	260
11:30 AM	304		172	50	38	130		198		15 375	264
12:00 PM	315		174	52	37	131		199		15 370	270
12:30 PM	297		171	52	36	141		200		16 365	266
01:00 PM	282		173	52	35	139		201		16 360	268
01:30 PM	298		171	93	38	137			203	16 350	264
02:00 PM	293		165	52	39	132		202	15	341	261
02:30 PM	297		160	51	39	131		205	14	326	262
03:00 PM	299		162	51	43	124		218	14	325	265
03:30 PM	299		158	48	47	121		213	13	341	262
04:00 PM	277		154	49	48	117		212	13	328	240
04:30 PM	246		132	45	40	114		208	13	140	223
05:00 PM	249		101	41	32	114		204	12	68	209
05:30 PM	242		100	40	24	119		199	12	59	184
06:00 PM	228		99	38	18	120		194	11	71	183
06:30 PM	248		98	40	15	112		202	8	67	186
07:00 PM	249		97	36	5	108		206	8	68	185
07:30 PM	263		94	37	17	113		193	8	55	187
08:00 PM	278		99	37	9	115		195	8	51	187
08:30 PM	279		98	37	11	114		190	8	43	181
09:00 PM	279		96	37	12	114		192	8	49	181
09:30 PM	275		97	36	10	115		190	8	48	183
10:00 PM	257		97	36	11	109		189	8	42	182
10:30 PM	262		97	36	8	108		191	8	49	183
11:00 PM	245		97	36	8	106		195	8	47	184
11:30 PM	259		93	35	7	107		182	8	44	183
TOTAL DEMAND	12,019		5,912	1,945	1,060	5,346		9,220	520	8,307	10,340

Aberdeen Proving Grounds

Substation #	1	8	12	13	26	33	33	
Feeder #	2	3		1	2	3	1200A	3000 A
BUILDING'S SERVED								
Building #'s	Pole #47	Pole #44		#3984			#5014	#5014
TEST TIME & DATE								
Date	10/17/95	10/18/95	10/18/95	10/18/95	10/24/95		10/19/95	10/18/95
Time Test Started	09:58 AM	10:01 AM	11:01 AM	10:26 AM	11:12 AM		01:44 PM	11:22 AM
Time Test Ended	08:30 AM	09:00 AM	09:58 AM	09:52 AM	09:00 AM		12:30 PM	10:50 AM
TEMPERATURES								
High Temperature	75	75	73	73	74		73	75
Low Temperature	54	54	47	47	48		56	54
Relative Humidity (RH)	68%	68%	61%	61%	58%		72%	68%
ELECTRIC USAGE								
On-Peak kWh	11,003	39,800	529	3,117	943		362	556
Interm kWh	13,407	10,920	524	2,370	916		326	580
Off-Peak kWh	5,750	12,950	602	1,996	1,310		313	20
Total kWh	30,160	63,670	1,655	7,483	3,169		1,001	1,156
DEMAND READINGS								
12:00 AM (Midnight)	558	1,275	60	195	132		31	0
12:30 AM	549	1,281	60	193	137		31	0
01:00 AM	555	1,128	60	194	133		31	0
01:30 AM	557	1,279	60	195	132		31	0
02:00 AM	549	1,276	60	192	133		30	0
02:30 AM	555	1,281	60	194	134		30	0
03:00 AM	547	1,281	59	193	130		30	0
03:30 AM	541	1,280	59	193	129		31	0
04:00 AM	539	1,277	60	191	132		31	0
04:30 AM	545	1,313	60	193	130		33	0
05:00 AM	551	1,317	59	193	128		32	0
05:30 AM	557	1,348	59	194	128		31	0
06:00 AM	619	1,407	63	199	129		32	0
06:30 AM	670	1,501	70	252	135		40	16
07:00 AM	694	1,624	72	323	138		64	61
07:30 AM	690	1,697	78	353	153		33	94
08:00 AM	688	1,758	83	385	152		62	161
08:30 AM	728	1,791	83	420	155		58	161
09:00 AM	741	1,796	83	421	159		58	159
09:30 AM	754	1,775	82	405	162		59	82
10:00 AM	759	1,753	85	414	160		61	141
10:30 AM	741	1,810	88	422	158		49	160
11:00 AM	754	1,828	91	411	158		45	166
11:30 AM	757	1,815	90	410	157		44	80
12:00 PM	790	1,814	91	410	158		45	12
12:30 PM	824	1,833	91	405	160		52	13
01:00 PM	824	1,869	90	442	158		60	46
01:30 PM	791	1,880	90	405	160		67	166
02:00 PM	798	1,868	88	396	161		68	168
02:30 PM	769	1,867	89	390	161		68	157
03:00 PM	762	1,871	88	390	160		69	154
03:30 PM	737	1,838	82	381	159		67	168
04:00 PM	658	1,750	78	401	155		55	167
04:30 PM	659	1,566	74	326	135		41	86
05:00 PM	645	1,437	69	278	112		29	21
05:30 PM	631	1,364	66	238	115		33	2
06:00 PM	641	1,322	65	224	117		33	0
06:30 PM	637	1,329	64	206	119		33	0
07:00 PM	631	1,305	62	204	123		31	0
07:30 PM	604	1,304	60	201	124		31	0
08:00 PM	592	1,306	60	199	125		30	0
08:30 PM	591	1,295	60	194	125		30	0
09:00 PM	610	1,283	59	193	126		30	0
09:30 PM	604	1,272	60	194	128		31	0
10:00 PM	609	1,284	60	193	131		31	0
10:30 PM	612	1,271	60	196	132		31	0
11:00 PM	588	1,272	60	201	135		33	0
11:30 PM	578	1,283	60	211	132		33	0
TOTAL DEMAND	31,383	72,374	3,408	13,612	6,700		2,006	5,328

Aberdeen Proving Grounds

Substation #	3				7		19	27	30		
Feeder #	2	3	4	1	2	3				1	2
BUILDING'S SERVED											
Building #'s		#449A	#449A	Blast Sph.	#1112	East Leg					
TEST TIME & DATE											
Date		10/19/95	10/19/95	10/18/95	10/18/95	10/18/95	10/20/95	10/19/95	10/19/95	10/25/95	10/23/95
Time Test Started		10:44 AM	10:52 AM	09:28 AM	09:21 AM	09:24 AM	11:00 AM	01:09 PM	02:44 PM	10:28 AM	11:58 AM
Time Test Ended		09:13 AM	09:11 AM	09:15 AM	09:16 AM	09:18 AM	10:25 AM	10:30 AM	08:30 AM	08:30 AM	09:00 AM
TEMPERATURES											
High Temperature		73	73	75	75	75	75	73	73	67	77
Low Temperature		56	56	54	54	55	54	56	56	44	55
Relative Humidity (RH)		72%	72%	68%	68%	68%	68%	72%	72%	62%	61%
ELECTRIC USAGE											
On-Peak kWh		379	2,798	169	958	258	1,036	462	120	269	617
Interm kWh		424	3,335	32	274	110	1,081	246	53	273	748
Off-Peak kWh		460	3,987	75	313	141	1,173	592	149	358	473
Total kWh		1,263	10,120	276	1,545	509	3,290	1,300	322	900	1,838
DEMAND READINGS											
12:00 AM (Midnight)		46	384	7	31	14	117	59	15	35	47
12:30 AM		44	391	8	30	14	120	59	15	24	45
01:00 AM		43	395	7	31	14	115	60	15	24	49
01:30 AM		43	401	8	30	14	118	59	14	25	48
02:00 AM		44	397	8	32	14	116	59	15	37	46
02:30 AM		45	390	8	32	14	111	60	15	44	45
03:00 AM		44	398	8	32	14	116	60	15	45	48
03:30 AM		45	404	9	32	14	116	58	15	45	49
04:00 AM		44	409	7	30	14	118	59	15	45	47
04:30 AM		42	409	9	31	14	115	60	15	45	46
05:00 AM		58	416	8	31	14	119	59	14	44	48
05:30 AM		51	413	9	31	15	115	59	15	29	48
06:00 AM		51	407	7	32	15	120	60	15	29	48
06:30 AM		67	435	8	39	17	122	59	17	30	56
07:00 AM		78	490	8	46	17	138	58	19	30	67
07:30 AM		76	511	8	47	18	149	54	21	29	155
08:00 AM		77	508	7	46	16	162	57	26	26	194
08:30 AM		80	524	6	48	20	175	61	29	24	200
09:00 AM		80	544	6	44	19	179	57 31	31		234
09:30 AM	79	525		6	45	26	182	58 33	34		219
10:00 AM	79	500		6	47	19	184	57 36	38		205
10:30 AM		77	475	6	48	19 184		60 39		38 191	
11:00 AM		79	531	5	46	28	184 62	41		37 177	
11:30 AM		76	548	6	45	21	180 65	37		49 163	
12:00 PM		73	565	5	45	18	185 67	35		54	149
12:30 PM		72	561	5	47	18	181 69	33		48	152
01:00 PM		70	556	6	44	18	184	69 31		46	162
01:30 PM		70	578	6	47	18	184	69 29		52	183
02:00 PM		70	579	5	51	18	179	65 27		53	160
02:30 PM		69	583	5	50	18	182	68	25	48	165
03:00 PM		69	583	5	47	17	180	68	26	44	171
03:30 PM		69	576	5	44	15	178	61	25	37	165
04:00 PM		64	537	5	39	15	167	53	19	35	131
04:30 PM		56	484	4	37	14	155	50	18	43	55
05:00 PM		46	436	4	36	14	100	51	17	43	45
05:30 PM		44	408	4	32	13	88	59	16	50	45
06:00 PM		45	400	4	30	13	83	57	15	44	44
06:30 PM		46	387	5	31	14	84	59	16	39	47
07:00 PM		47	390	5	32	14	83	59	15	45	47
07:30 PM		47	397	7	31	14	80	60	16	48	49
08:00 PM		47	388	6	31	14	82	59	14	57	46
08:30 PM		46	391	7	32	14	79	59	16	56	49
09:00 PM		47	395	6	31	14	103	59	14	49	46
09:30 PM		46	383	7	31	14	119	59	17	40	44
10:00 PM		47	386	7	31	14	120	60	14	38	47
10:30 PM		45	382	6	31	14	118	59	15	36	45
11:00 PM		45	381	8	31	14	118	58	15	30	48
11:30 PM		44	378	7	31	14	118	60	16	27	46
TOTAL DEMAND		2,770	21,905	309	1,800	766	6,505	2,876	1,006	1,898	4,615

Aberdeen Proving Grounds

Substation #	4				10	14	22	23	6		
Feeder #	3	4	5	6					1	2	1
BUILDING'S SERVED											
Building #'s											
TEST TIME & DATE											
Date	10/23/95	10/23/95	10/23/95	10/23/95		10/19/95		10/23/95			10/20/95
Time Test Started	12:03 PM	12:15 PM	12:19 PM	12:10 PM		02:05 PM		10:11 AM			01:04 PM
Time Test Ended	08:30 AM	08:30 AM	08:30 AM	09:00 AM		10:00 AM		10:30 AM			01:00 PM
TEMPERATURES											
High Temperature	77	77	77	77		73		77			71
Low Temperature	55	55	55	55		56		55			49
Relative Humidity (RH)	61%	61%	61%	61%		72%		61%			100%
ELECTRIC USAGE											
On-Peak kWh	3,027	1,273	4,887	3,563		2,938		691			2,008
Interm kWh	2,735	1,308	3,247	4,893		1,616		731			1,439
Off-Peak kWh	3,511	1,689	4,770	7,024		2,603		511			2,298
Total kWh	9,273	4,270	12,904	15,480		7,157		1,932			5,745
DEMAND READINGS											
12:00 AM (Midnight)	347	170	438	650		305		51			227
12:30 AM	319	165	436	630		295		51			226
01:00 AM	318	166	429	629		268		51			224
01:30 AM	314	167	434	612		267		51			231
02:00 AM	317	169	445	622		270		52			227
02:30 AM	323	167	436	605		270		51			224
03:00 AM	314	166	440	611		264		51			229
03:30 AM	316	165	464	619		212		51			224
04:00 AM	316	169	481	631		197		50			230
04:30 AM	320	163	537	694		203		51			230
05:00 AM	333	168	541	738		211		51			230
05:30 AM	366	170	573	789		218		50			217
06:00 AM	411	176	590	848		218		51			218
06:30 AM	485	216	664	937		262		53			215
07:00 AM	546	251	683	957		375		88			228
07:30 AM	583	275	690	966		465		99			229
08:00 AM	586	290	705	963		475		107			237
08:30 AM	591	289	697	1,010		501		112			248
09:00 AM	593	290	700	1,040		501		126			254
09:30 AM	597	295	710	1,050		505		126			261
10:00 AM	600	300	720	1,060		531		123			244
10:30 AM	597	305	730	1,050		550		127			248
11:00 AM	595	310	740	1,040		570		111			246
11:30 AM	593	305	730	1,030		590		107			256
12:00 PM	593	300	725	1,032		665		106			250
12:30 PM	586	285	722	1,015		670		119			243
01:00 PM	593	300	707	1,008		665		120			431
01:30 PM	594	299	713	1,032		660		110			438
02:00 PM	589	297	702	1,023		656		111			428
02:30 PM	594	300	721	1,024		631		113			405
03:00 PM	563	280	720	1,026		632		114			387
03:30 PM	532	250	703	1,025		571		107			351
04:00 PM	456	217	672	987		443		78			329
04:30 PM	438	180	628	905		282		46			272
05:00 PM	382	156	592	890		284		44			248
05:30 PM	384	152	572	857		265		45			247
06:00 PM	396	160	568	848		275		46			250
06:30 PM	408	147	601	909		294		50			258
07:00 PM	418	152	595	937		283		51			263
07:30 PM	403	154	590	934		283		51			269
08:00 PM	413	162	590	878		275		51			266
08:30 PM	416	157	553	866		279		51			269
09:00 PM	427	164	525	835		283		51			254
09:30 PM	395	166	508	784		283		51			246
10:00 PM	371	169	459	748		305		51			239
10:30 PM	357	171	445	726		309		51			236
11:00 PM	357	170	445	706		290		51			237
11:30 PM	347	167	436	673		280		51			229
TOTAL DEMAND	21,689	10,261	28,500	41,445		18,384		3,560			12,646

Aberdeen Proving Grounds

Substation #	9		20		25		31		5			
Feeder #	2	3		1	2	1	2	1	2	3	4	
BUILDING'S SERVED												
Building #'s												
TEST TIME & DATE												
Date		10/20/95	10/20/95	10/20/95	10/20/95	10/20/95	10/20/95			10/23/95	10/24/95	
Time Test Started		01:12 PM	10:33 AM	02:03 PM	02:12 PM	02:46 PM	02:50 PM			11:44 AM	11:10 AM	
Time Test Ended		01:00 PM	10:30 AM	02:00 PM	02:06 PM	10:00 AM	03:00 PM			09:37 AM	08:10 AM	
TEMPERATURES												
High Temperature		71	71	71	71	71	71			74	74	
Low Temperature		49	49	49	49	49	49			48	48	
Relative Humidity (RH)		100%	100%	100%	100%	100%	100%			58%	58%	
ELECTRIC USAGE												
On-Peak kWh		3,446	479	1,581	1,534	12,714	1,070			3,646	2,181	
Interm kWh		2,301	371	1,304	1,453	1,838	748			3,265	4,403	
Off-Peak kWh		3,878	621	1,153	1,125	5,548	1,425			4,869	4,715	
Total kWh		9,625	1,471	4,038	4,112	20,100	3,243			11,780	11,299	
DEMAND READINGS												
12:00 AM (Midnight)		368	63	109	110	559	143			476	456	
12:30 AM		369	63	103	105	526	142			455	459	
01:00 AM		366	63	94	89	513	137			465	462	
01:30 AM		367	63	90	82	464	135			463	470	
02:00 AM		389	63	86	86	414	131			485	468	
02:30 AM		384	63	89	87	422	138			486	476	
03:00 AM		384	63	83	84	400	137			473	476	
03:30 AM		398	63	83	82	396	143			476	478	
04:00 AM		393	63	86	76	365	143			503	479	
04:30 AM		386	63	81	90	381	155			487	482	
05:00 AM		381	61	87	86	397	157			482	486	
05:30 AM		390	57	92	99	400	156			462	498	
06:00 AM		403	56	92	95	418	136			491	475	
06:30 AM		389	56	99	109	497	140			537	582	
07:00 AM		401	56	132	137	527	134			570	641	
07:30 AM		386	57	140	140	573	133			589	657	
08:00 AM		404	57	168	154	693	131			541	643	
08:30 AM		386	56	164	184	756	131			563	700	
09:00 AM		373	56	191	187	855	120			560	750	
09:30 AM		406	57	200	234	986	121			550	800	
10:00 AM		418	57	234	230	1,092	119			550	860	
10:30 AM		407	58	255	232	1,051	121			545	850	
11:00 AM		390	58	258	252	1,009	122			540	843	
11:30 AM		386	60	257	288	968	125			546	813	
12:00 PM		386	62	245	260	927	127			554	802	
12:30 PM		395	62	239	230	885	134			529	782	
01:00 PM		622	62	224	257	844	129			591	781	
01:30 PM		615	61	203	253	802	130			585	819	
02:00 PM		601	64	123	101	761	119			547	821	
02:30 PM		589	62	116	100	601	118			565	787	
03:00 PM		588	63	126	126	720	185			553	741	
03:30 PM		581	62	123	118	756	180			502	681	
04:00 PM		539	62	155	150	799	160			504	619	
04:30 PM		500	61	165	153	866	145			482	542	
05:00 PM		480	62	212	180	910	138			484	480	
05:30 PM		469	62	193	190	933	134			490	481	
06:00 PM		488	63	204	211	964	143			493	471	
06:30 PM		479	63	218	219	1,037	139			525	476	
07:00 PM		470	63	221	205	993	141			515	470	
07:30 PM		448	63	215	206	1,006	141			511	474	
08:00 PM		440	63	212	205	1,033	157			509	470	
08:30 PM		411	63	197	196	957	147			517	469	
09:00 PM		410	63	194	174	971	153			517	473	
09:30 PM		412	63	198	170	916	143			501	465	
10:00 PM		409	64	202	171	865	143			505	467	
10:30 PM		396	64	170	153	807	147			496	459	
11:00 PM		386	63	143	151	699	145			510	464	
11:30 PM		370	63	130	132	666	143			477	461	
TOTAL DEMAND		20.803	2.939	7.700	7.628	35.380	6.688			24.755	28.257	

Aberdeen Proving Grounds

Substation #	11		21	28	29		
Feeder #	1	2			1	4	TOTALS
BUILDING'S SERVED							
Building #'s							
TEST TIME & DATE							
Date	10/23/95	10/23/95	10/23/95	10/24/95	10/23/95	10/23/95	
Time Test Started	01:22 PM	01:27 PM	09:51 AM	01:07 PM	03:21 PM	03:24 PM	
Time Test Ended	10:00 AM	09:30 AM	10:00 AM	08:00 AM	10:30 AM	10:30 AM	
TEMPERATURES							
High Temperature	77	77	77	74	73	73	
Low Temperature	55	55	55	48	56	56	
Relative Humidity (RH)	61%	61%	61%	58%	72%	72%	
ELECTRIC USAGE							
On-Peak kWh	192	578	59	173	2,219	1,475	127,170
Interm kWh	96	290	44	160	510	233	77,601
Off-Peak kWh	261	872	80	210	2,192	1,530	92,017
Total kWh	549	1,740	184	543	4,921	3,238	296,788
DEMAND READINGS							
12:00 AM (Midnight)	26	87	8	21	186	138	8,952
12:30 AM	25	90	8	20	177	138	8,792
01:00 AM	24	90	8	21	172	135	8,581
01:30 AM	23	90	8	21	169	134	8,683
02:00 AM	28	88	8	21	169	131	8,679
02:30 AM	25	88	8	21	176	132	8,689
03:00 AM	25	88	8	21	167	131	8,658
03:30 AM	27	88	8	21	167	134	8,658
04:00 AM	29	87	8	21	187	144	8,682
04:30 AM	25	87	8	21	271	157	8,963
05:00 AM	29	85	8	20	261	135	9,052
05:30 AM	25	86	8	19	304	142	9,243
06:00 AM	24	85	7	26	316	189	9,630
06:30 AM	27	85	7	46	348	174	10,654
07:00 AM	29	99	7	40	310	132	11,694
07:30 AM	28	85	7	41	279	128	12,358
08:00 AM	28	83	7	40	220	128	12,825
08:30 AM	28	85	9 41		228	125	13,246
09:00 AM	30	87	7 42		243	127	13,599
09:30 AM	28	90	7 42		266	129	13,806
10:00 AM	31 95		7 42		283	129	14,119
10:30 AM	30 100		7 43		276	126	14,183
11:00 AM	28 110		7 43	278	129		14,279
11:30 AM	30 100		7 44	280	130		14,078
12:00 PM	28 95		8 44	282	125		13,986
12:30 PM	26 90		8 45	284	127		13,930
01:00 PM	22 85		7	30 288	125		14,458
01:30 PM	18 80		7	45 290	130		14,592
02:00 PM	28 90		7	45 288	127		14,104
02:30 PM	26 89		7	46 284	125		13,834
03:00 PM	25 87		7	46 284	125		13,926
03:30 PM	26 86		8	45 286	125		13,528
04:00 PM	29 85		8	40 274	132		12,726
04:30 PM	30 58		8	22 308	157		11,384
05:00 PM	24 57		8	15 279	199		10,716
05:30 PM	23 57		8	15 303	231		10,470
06:00 PM	23 57		8	15 331	226		10,502
06:30 PM	24 76		8	19 314	239		10,782
07:00 PM	26 81		8	21 318	257		10,708
07:30 PM	29 85		8	21 298	264		10,650
08:00 PM	25 85		8	21 267	256		10,574
08:30 PM	25 84		8	21 264	247		10,348
09:00 PM	25 86		8	21 249	241		10,306
09:30 PM	28 85		8	21 237	209		10,041
10:00 PM	27 87		8	21 229	178		9,872
10:30 PM	25 88		8	21 197	158		9,624
11:00 PM	26 87		10	21 190	147		9,409
11:30 PM	29 87		8	20 184	139		9,201
TOTAL DEMAND	1,263	4,103	368	1,416	12,258	7,584	

ATTACHMENT 8.6
INCREMENTAL COST CALCULATION

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis
Prepared by Entech Engineering, Inc.

Billing and Client Information

Client	Aberdeen Proving Grounds
Billing Year	1995
Billing Period	January
# of Billing Days	28
Enter "1" for Oct-May, 0 for Jun-Sept	1
Rates Schedule in Effect	Non-Summer

Demand and Usage Information

Supply Voltage	13,200
<i>Demand Measurements</i>	
Production & Transmission Demand (kW)	23,400
Distribution Demand (kW)	23,040
<i>Usage Measurements</i>	
On-Peak Period (kWh)	2,884,895
Intermediate Period (kWh)	2,271,744
Off-Peak Period (kWh)	5,480,361
Total (kWh)	10,637,000

Taxes and Special Adjustments

Fuel Rate Total Energy Charge	\$0.01227
Electric Environment Surcharge	\$1,000.00
<i>Credits</i>	
Transmission Line Contract 6/26/50	(\$731.00)
Rider #5 Air Conditioning Credit	\$0.00

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis

Prepared by Entech Engineering, Inc.

Duplicated Electric Bill

Customer Charge	1 Bill @	\$750.00	Per Bill =	\$750.00
<i>On-Peak Usage Charge</i>				
Base Rate Charge	2,884,895 kWh @	\$0.02360	Per kWh =	\$68,083.52
<i>Intermediate Usage Charge</i>				
Base Rate Charge	2,271,744 kWh @	\$0.02140	Per kWh =	\$48,615.32
<i>Off-Peak Usage Charge</i>				
Base Rate Charge	5,480,361 kWh @	\$0.01277	Per kWh =	\$69,984.21
<i>Demand Charges</i>				
Distribution Demand Charge	23,040 kW @	\$2.33	Per kW =	\$53,683.20
Prod & Trans Demand Charge	23,400 kW @	\$5.99	Per kW =	\$140,166.00
<i>Other Charges and Credits</i>				
Fuel Rate Total Energy Charge	\$0.01227 \$/kWh x	\$10,637,000	Subtotal =	\$130,515.99
Electric Envir Surcharge		\$1,000.00	Subtotal =	\$1,000.00
Transmission Line Credit		(\$731.00)	Subtotal =	(\$731.00)
Rider #5 A/C Credit		\$0.00	Subtotal =	\$0.00
CURRENT PERIOD CHARGES				\$512,067.24

Calculated Incremental

Total Incremental Cost Per kW	\$8.32
Incremental Cost Per On-Peak kWh	\$0.03587
Incremental Cost Per Intermediate kWh	\$0.03367
Incremental Cost Per Off-Peak kWh	\$0.02504

Calculated Billing Statistics Based on Incremental Costs

Demand Cost	\$194,688.00	Energy Cost	\$317,199.04
% Demand	38.0%	% Energy	61.9%

Current Electric Tariff (Rate P)

	Summer	Non-Summer
Customer Charge (\$/Bill)	\$750.00	\$750.00
Production & Transmission Demand Charge (\$/kW)	\$12.09	\$5.99
Distribution Demand Charge (\$/kW)	\$2.33	\$2.33
On-Peak Usage Charge (\$/kWh)	\$0.03893	\$0.02360
Intermediate Usage Charge (\$/kWh)	\$0.02845	\$0.02140
Off-Peak Usage Charge (\$/kWh)	\$0.01271	\$0.01277

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis

Prepared by Entech Engineering, Inc.

Electric Bill Calculation

Calculation Description	Actual Billing	Demand, kW Minus 1 kW	On-Peak Usage Minus 1 kWh	Intermediate Minus 1 kWh	Off-Peak Minus 1 kWh
Production & Transmission Demand (kW)	23,400	23,399	23,400	23,400	23,400
Distribution Demand (kW)	23,040	23,039	23,040	23,040	23,040
On-Peak Usage (kWh)	2,884,895	2,884,895	2,884,894	2,884,895	2,884,895
Intermediate Usage (kWh)	2,271,744	2,271,744	2,271,744	2,271,743	2,271,744
Off-Peak Usage (kWh)	5,480,361	5,480,361	5,480,361	5,480,361	5,480,360
Total Usage (kWh)	10,637,000	10,637,000	10,636,999	10,636,999	10,636,999
<i>Breakdown Calculations</i>					
Billing Production & Trans Demand (kW)	23,400	23,399	23,400	23,400	23,400
Billing Distribution Demand (kW)	23,040	23,039	23,040	23,040	23,040
On-Peak Usage (kWh)	2,884,895	2,884,895	2,884,894	2,884,895	2,884,895
Intermediate Usage (kWh)	2,271,744	2,271,744	2,271,744	2,271,743	2,271,744
Off-Peak Usage (kWh)	5,480,361	5,480,361	5,480,361	5,480,361	5,480,360
Total Usage (kWh)	10,637,000	10,637,000	10,636,999	10,636,999	10,636,999
<i>Cost Calculation</i>					
Customer Charge, \$	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00
On-Peak kWh Base Rate Charge, \$	\$68,083.52	\$68,083.52	\$68,083.50	\$68,083.52	\$68,083.52
Intermediate kWh Base Rate Charge, \$	\$48,615.32	\$48,615.32	\$48,615.32	\$48,615.30	\$48,615.32
Off-Peak kWh Base Rate Charge, \$	\$69,984.21	\$69,984.21	\$69,984.21	\$69,984.21	\$69,984.20
Production & Trans Demand Charge, \$	\$140,166.00	\$140,160.01	\$140,166.00	\$140,166.00	\$140,166.00
Distribution Demand Charge, \$	\$53,683.20	\$53,680.87	\$53,683.20	\$53,683.20	\$53,683.20
<i>Other Charges</i>					
Fuel Rate Total Energy Charge, \$	\$130,515.99	\$130,515.99	\$130,515.98	\$130,515.98	\$130,515.98
Electric Environment Surcharge, \$	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
<i>Discounts</i>					
Transmission Line Credit, \$	(\$731.00)	(\$731.00)	(\$731.00)	(\$731.00)	(\$731.00)
Rider #5 A/C Credit, \$	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Net Current Bill	\$512,067.24	\$512,058.92	\$512,067.21	\$512,067.21	\$512,067.22
Incremental/Penalties	n/a	\$8.32	\$0.03587	\$0.03367	\$0.02504

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis
Prepared by Entech Engineering, Inc.

Incremental Cost Check

\$ Calculations on Incrementals			
Total Demand (\$)	23,400 kW x	\$8.32 /kW =	\$194,688.00
Off-Peak Usage (\$)	5,480,361 kWh	\$0.025 /kW =	\$137,228.24
Intermediate Usage (\$)	2,271,744 kWh	\$0.034 /kW =	\$76,489.62
On-Peak Usage (\$)	2,884,895 kWh	\$0.036 /kW =	\$103,481.18
Total Calculated Billing Using Incrementals			\$511,887.04
Actual Current Period Charges			\$512,067.24
Actual Current Period Charges Minus Rider #5			\$512,067.24
Cost Variance (Actual Minus Incremental)			\$180.20
Percent Variance (Var/Actual)			0.04%

MIETER READING DATES

1/3/95 TO 1/31/95

NEXT SCHEDULED READING DATE

3/2/95

DUE

3/2/95

ELECTRIC SCHEDULE

P TIME-OF-DAY (TOD) BILL

JUN-SEPT		Days	
(1)	(2)	(3)=(1)x(2)	
UNITS	RATE	AMOUNT \$	

A. Customer Charge Per Month

KW		Per KW
Production & Transmission		\$12.09
Distribution		\$ 2.33

C. ENERGY CHARGES:

KWII		Per KWII
On-Peak		\$.03893
Intermediate Peak		\$.02845
Off-Peak		\$.01571
Total Energy Charges		

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 64844

BALTIMORE, MARYLAND 21264-4844

U.S. DEPT OF THE ARMY

DAAD 05-70-C-0096

ATTN STEAP-FE-B

ABERDEEN PRV GRND MD 21005

6940

WC

FOR OFFICE USE ONLY	
TC	C/C
SCHED.	
CODE	
NO. OF	
METERS	
LATE PYMT. CHG.	
MINIMUM CHARGE:	
\$750.00 PLUS	
DEMAND CHARGE	

RIDER #5 AIR CONDITIONING CREDIT

CREDIT FOR USE OF TRANSMISSION LINE
PER CONTRACT DATED 6/26/50

DATE: 1/5/95

TIME: 8:30

DEM KW: 23400

OCT-MAY		Days		Total	
(4)	(5)	(6)=(4)x(5)		(7)=(1)x(4)	(8)=(3)+(6)
UNITS	RATE	AMOUNT \$		KWH	NET AMT.
KW		Per KW			
23400		\$5.99			140166.00
23040		\$2.33			53683.20
KWII		Per KWII			
2884895		\$.02360			68083.52
2271744		\$.02140			48615.32
5480361		\$.01277			69984.21
10637000				10637000	186683.03
Fuel Rate Total Energy		KWII @ .01227			130515.99
Sub-Total		KWII @ .01227			511798.24
County Surchargo					0
Elec. Envir. Surchargo					1000.00
Sub-Total					512798.24
Total Electric Gross					731.00 C
Net:					512067.24

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis
Prepared by Entech Engineering, Inc.

Billing and Client Information

Client	Aberdeen Proving Grounds
Billing Year	1996
Billing Period	June
# of Billing Days	29
Enter "1" for Oct-May, 0 for Jun-Sept	0
Rates Schedule in Effect	Summer

Demand and Usage Information

Supply Voltage	13,200
<i>Demand Measurements</i>	
Production & Transmission Demand (kW)	24,840
Distribution Demand (kW)	24,840
<i>Usage Measurements</i>	
On-Peak Period (kWh)	3,974,633
Intermediate Period (kWh)	2,085,533
Off-Peak Period (kWh)	4,642,834
Total (kWh)	10,703,000

Taxes and Special Adjustments

Fuel Rate Total Energy Charge	\$0.01227
Electric Environment Surcharge	\$1,000.00
<i>Credits</i>	
Transmission Line Contract 6/26/50	(\$731.00)
Rider #5 Air Conditioning Credit	(\$6,220.00)

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis

Prepared by Entech Engineering, Inc.

Duplicated Electric Bill

Customer Charge	1 Bill @	\$750.00	Per Bill =	\$750.00
<i>On-Peak Usage Charge</i>				
Base Rate Charge	3,974,633 kWh @	\$0.03861	Per kWh =	\$153,460.58
<i>Intermediate Usage Charge</i>				
Base Rate Charge	2,085,533 kWh @	\$0.02813	Per kWh =	\$58,666.04
<i>Off-Peak Usage Charge</i>				
Base Rate Charge	4,642,834 kWh @	\$0.01539	Per kWh =	\$71,453.22
<i>Demand Charges</i>				
Distribution Demand Charge	24,840 kW @	\$2.33	Per kW =	\$57,877.20
Prod & Trans Demand Charge	24,840 kW @	\$12.09	Per kW =	\$300,315.60
<i>Other Charges and Credits</i>				
Fuel Rate Total Energy Charge	\$0.01227 \$/kWh x	\$10,703,000	Subtotal =	\$131,325.81
Electric Envir Surcharge		\$1,000.00	Subtotal =	\$1,000.00
Transmission Line Credit		(\$731.00)	Subtotal =	(\$731.00)
Rider #5 A/C Credit		(\$6,220.00)	Subtotal =	(\$6,220.00)
CURRENT PERIOD CHARGES				\$767,897.45

Calculated Incremental

Total Incremental Cost Per kW	\$14.42
Incremental Cost Per On-Peak kWh	\$0.05088
Incremental Cost Per Intermediate kWh	\$0.04040
Incremental Cost Per Off-Peak kWh	\$0.02766

Calculated Billing Statistics Based on Incremental Costs

Demand Cost	\$358,192.80	Energy Cost	\$414,905.65
% Demand	46.6%	% Energy	54.0%

Current Electric Tariff (Rate P)

	Summer	Non-Summer
Customer Charge (\$/Bill)	\$750.00	\$750.00
Production & Transmission Demand Charge (\$/kW)	\$12.09	\$5.99
Distribution Demand Charge (\$/kW)	\$2.33	\$2.33
On-Peak Usage Charge (\$/kWh)	\$0.03861	\$0.02328
Intermediate Usage Charge (\$/kWh)	\$0.02813	\$0.02108
Off-Peak Usage Charge (\$/kWh)	\$0.01539	\$0.01245

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis

Prepared by Entech Engineering, Inc.

Electric Bill Calculation

Calculation Description	Actual Billing	Demand, kW Minus 1 kW	On-Peak Usage Minus 1 kWh	Intermediate Minus 1 kWh	Off-Peak Minus 1 kWh
Production & Transmission Demand (kW)	24,840	24,839	24,840	24,840	24,840
Distribution Demand (kW)	24,840	24,839	24,840	24,840	24,840
On-Peak Usage (kWh)	3,974,633	3,974,633	3,974,632	3,974,633	3,974,633
Intermediate Usage (kWh)	2,085,533	2,085,533	2,085,533	2,085,532	2,085,533
Off-Peak Usage (kWh)	4,642,834	4,642,834	4,642,834	4,642,834	4,642,833
Total Usage (kWh)	10,703,000	10,703,000	10,702,999	10,702,999	10,702,999
<i>Breakdown Calculations</i>					
Billing Production & Trans Demand (kW)	24,840	24,839	24,840	24,840	24,840
Billing Distribution Demand (kW)	24,840	24,839	24,840	24,840	24,840
On-Peak Usage (kWh)	3,974,633	3,974,633	3,974,632	3,974,633	3,974,633
Intermediate Usage (kWh)	2,085,533	2,085,533	2,085,533	2,085,532	2,085,533
Off-Peak Usage (kWh)	4,642,834	4,642,834	4,642,834	4,642,834	4,642,833
Total Usage (kWh)	10,703,000	10,703,000	10,702,999	10,702,999	10,702,999
<i>Cost Calculation</i>					
Customer Charge, \$	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00
On-Peak kWh Base Rate Charge, \$	\$153,460.58	\$153,460.58	\$153,460.54	\$153,460.58	\$153,460.58
Intermediate kWh Base Rate Charge, \$	\$58,666.04	\$58,666.04	\$58,666.04	\$58,666.02	\$58,666.04
Off-Peak kWh Base Rate Charge, \$	\$71,453.22	\$71,453.22	\$71,453.22	\$71,453.22	\$71,453.20
Production & Trans Demand Charge, \$	\$300,315.60	\$300,303.51	\$300,315.60	\$300,315.60	\$300,315.60
Distribution Demand Charge, \$	\$57,877.20	\$57,874.87	\$57,877.20	\$57,877.20	\$57,877.20
<i>Other Charges</i>					
Fuel Rate Total Energy Charge, \$	\$131,325.81	\$131,325.81	\$131,325.80	\$131,325.80	\$131,325.80
Electric Environment Surcharge, \$	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
<i>Discounts</i>					
Transmission Line Credit, \$	(\$731.00)	(\$731.00)	(\$731.00)	(\$731.00)	(\$731.00)
Rider #5 A/C Credit, \$	(\$6,220.00)	(\$6,220.00)	(\$6,220.00)	(\$6,220.00)	(\$6,220.00)
Net Current Bill	\$767,897.45	\$767,883.03	\$767,897.40	\$767,897.41	\$767,897.42
Incremental/Penalties	n/a	\$14.42	\$0.05088	\$0.04040	\$0.02766

Baltimore Gas & Electric Company, P (Primary Voltage Service) Electric Rate Analysis
Prepared by Entech Engineering, Inc.

Incremental Cost Check

\$ Calculations on Incrementals

Total Demand (\$)	24,840 kW x	\$14.42 /kW =	\$358,192.80
Off-Peak Usage (\$)	4,642,834 kWh	\$0.028 /kW =	\$128,420.79
Intermediate Usage (\$)	2,085,533 kWh	\$0.040 /kW =	\$84,255.53
On-Peak Usage (\$)	3,974,633 kWh	\$0.051 /kW =	\$202,229.33
Total Calculated Billing Using Incrementals			\$773,098.45
Actual Current Period Charges			\$767,897.45
Actual Current Period Charges Minus Rider #5			\$774,117.45
Cost Variance (Actual Minus Incremental)			\$1,019.00
Percent Variance (Var/Actual)			0.13%

METER READING DATES

6/1/95 to 6/30/95

BALTIMORE GAS AND ELECTRIC COMPANY

5600 MARYLAND BLVD *SECT AA

9726

NEXT SCHEDULED READING DATE

P.O. BOX 64844

U S DEPT OF THE ARMY

6940

8/2/95

BALTIMORE, MARYLAND 21264-4844

DAAD 05-70-C-0096

W C

DUE

8/3/95

ATTN STRAP-FE-B

ABERDEEN PRV GRND MD 21005

ELECTRIC SCHEDULE P TIME-OF-DAY (TOD) BILL

	JUN-SEPT		Days		OCT-MAY		Days		Total	
	(1)	(2)	(3)=(1)x(2)	(4)	(5)	(6)=(4)x(5)	(7)=(1)+(4)	(8)=(3)+(6)	NET AMT.	
	UNITS	RATE	AMOUNT \$	UNITS	RATE	AMOUNT \$	KWH			
A. Customer Charge Per Month									\$ 750.00	

B. Demand Charges:

		KW		Per KW		KW		Per KW	
Subduction & Transmission		24840		\$ 12.09		300315.60		\$ 5.99	
Distribution		24840		\$ 2.33		57877.20		\$ 2.33	
									300315.60
									57877.20

C. ENERGY CHARGES:

		KWH		Per KWH		KWH		Per KWH	
On-Peak		3974633		\$.03861		153460.58		.02328	
Intermediate Peak		2085533		\$.02813		58666.04		.02108	
Off-Peak		4642834		\$.01539		71453.22		.01245	
Total Energy Charges		10703000					10703000		283579.84

FOR OFFICE USE ONLY

TC.		Fuel Rate Total Energy		KWH		Sub-Total	
C/C		Rider 5 Air Conditioning Credit		County Surcharge		6220.00	
SCHED.		Credit for use of transmission line		Elec. Envir. Surcharge		1000.00	
CODE		per contract dated 6/26/50		Sub-Total		768628.45	
NO. OF		Demand		Sub-Total		731.00CR	
METERS		Date		Total Electric Gross:		Net:	
LATE PYMT. CHG.		Time		\$ 767897.45		\$ 767897.45	
MINIMUM CHARGE:							
\$ 750.00 PLUS							
DEMAND CHARGE							

ATTACHMENT 8.7
ELECTRIC SUBMETER READINGS

2000 MARYLAND BLVD BALTIMORE, MD 21205
U S DEPT OF THE ARMY
DAAD 05-70-C-0096
ATTN STEAP-SV-RP.
ABRON PRV GRD MD 21005

BALTIMORE GAS & ELECTRIC COMPANY
P.O. BOX 630632
BALTIMORE, MARYLAND 21263

12/2/93 TO 1/3/94
NEXT SCHEDULED READING DATE
12/31/94

DUE
1/26/94

Return This Stub With Payment

METER NUMBER	METER READINGS-INCLUDING CONSTANT PREVIOUS	UNITS- GAS-100 CU. FT. ELEC. - KWII	GROSS AMOUNT	NET AMOUNT
--------------	--	-------------------------------------	--------------	------------

ELEC	38716000	166000	540949.45	540949.45
ELEC	95942000	3361000		
ELEC	80788000	8246000		
		11773000		

PRIOR BILL

GROSS TOTAL NET TOTAL

GAS-SCHEDULE C

GAS UNITS USED X THERMS PER UNIT = THERMS BILLED

CUSTOMER CHARGE	THERMS BY RATE BLOCKS & NET RATE PER THERM		Purchased Gas Adj.	GROSS AMOUNT	NET AMOUNT
	THERMS	RATE	Total Therms @		
\$15.00	\$1.550		\$0.764		
	10000				

RATES

THERMS

AMOUNT \$

COUNTY SURCHARGE
TOTAL
STATE TAX
CITY-COUNTY TAX
TOTAL GAS

ELECTRIC-SCHEDULE P
SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page-

TOTAL ELECTRIC	540944.45	540944.45
Prior Bill(s)		
Rentals Incl. State Tax		
Dem. Hist. Rec. Chg.	5.00	5.00
TOTAL BILL	540949.45	540949.45

MILLER READING DATES
 1/3/94 TO 1/31/94
 NEXT SCHEDULED READING DATE
 3/2/94
 DUE
 2/28/94

BALTIMORE GAS & ELECTRIC COMPANY
 P.O. BOX 630632
 BALTIMORE, MARYLAND 21263

5600 MARYLAND BLVD *SECT AA
 U S DEPT OF THE ARMY
 DAAD 05-70-C-0096
 ATTN STEAP-SV-RP
 ABRDN PRV GRD MD 21005

Baltimore Gas & Electric Company
 Pay Gross Total After
 9722
 6940
 W4C
 2/28/94

Return This Stub With Payment

METER NUMBER	METER READINGS-INCLUDING CONSTANT PREVIOUS	UNITS- GAS-100 CU. FT. ELEC. - KWH	GROSS AMOUNT	NET AMOUNT
ELEC 20	38858000	142000	591463.72	591463.72
ELEC 22	03361000	7419000		
ELEC 23	85250000	4462000		
		12023000		
			PRIOR BILL	
			GROSS TOTAL	NET TOTAL

GAS-SCHEDULE C				THERMS PER UNIT = THERMS BILLED	
GAS UNITS USED		THERMS BY RATE BLOCKS & NET RATE PER THERM		Purchased Gas Adj.	
CUSTOMER CHARGE				Total Therms @	
RATES	\$15.00	\$1.550	\$0.764		
THERMS		10000			
AMOUNT \$					
				COUNTY SURCHARGE	
				TOTAL	
				STATE TAX	
				CITY-COUNTY TAX	
				TOTAL GAS	

ELECTRIC - SCHEDULE P				SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA	
				Brought Forward from Attached Page-	
				TOTAL ELECTRIC	591458.72
				Prior Bill(s)	
				Rentals Incl. State Tax	
				Dem. Hist. Rec. Chg.	5.00
				TOTAL BILL	591463.72

M:7175 (701)

METER READING DATES
4/29/94 to 6/1/94
NEXT SCHEDULED READING DATE
6/30/94

BALTIMORE GAS & ELECTRIC COMPANY
P.O. BOX 630632
BALTIMORE, MARYLAND 21263

DAAD 05-70-G-0096
ATTN STEAP-SV-RP
ABERDEEN PRV GRND MD 21005

9722
6940
W C 6/28/94

Return This Stub With Payment

METER NUMBER

METER READINGS INCLUDING CONSTANT PREVIOUS

UNITS- GAS-100 CU. FT.
ELEC. - KWH

20
22
23

39494000
29188000
00887000

175000
5998000
3747000
9920000

ELEG
ELEG
ELEG

472376.31

472376.31

GROSS AMOUNT

NET AMOUNT

472376.31

472376.31

GROSS TOTAL

NET TOTAL

472376.31

472376.31

GAS-SCHEDULE C

GAS UNITS USED

X THERMS PER UNIT

= THERMS BILLED

CUSTOMER CHARGE

\$15.00

THERMS BY RATE BLOCKS & NET RATE PER THERM

\$.1550

10000

THERMS

175000

AMOUNT \$

26250.00

Purchased Gas Adj.

Total Therms @

COUNTY SURCHARGE

TOTAL

STATE TAX

CITY-COUNTY TAX

TOTAL GAS

GROSS AMOUNT

NET AMOUNT

472371.31

472371.31

TOTAL ELECTRIC

Prior Bill(s)

Rentals Incl. State Tax

Dem. Hist. Rec. Chg.

TOTAL BILL

472371.31

5.00

472376.31

ELECTRIC - SCHEDULE P

SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page-

Federal Tax Identification # 52-0280210

NA-7375 (7/93)

MI-2775 (1023)

METER READING DATES

6/30/94 TO 8/1/94

NEXT SCHEDULED READING DATE

8/31/94

BALTIMORE GAS & ELECTRIC COMPANY

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

U S DEPT OF THE ARMY

DAAD 05-70-C-0096

ATTN STEAP-SV-RP

ABERDEEN PRV GRND MD 21005

DATE

8/24/94

Pay Gross Total After

9722

6940

WC

8/24/94

Return This Stub With Payment

METER NUMBER	METER READINGS INCLUDING CONSTANT PREVIOUS	UNITS- GAS-100 CU. FT. ELEC. - KWH	GROSS AMOUNT	NET AMOUNT
--------------	--	------------------------------------	--------------	------------

ELEC	20	39885000	39674000	211000
ELEC	22	41200000	35406000	5794000
ELEC	23	12770000	05934000	6836000
				12841000

865233.70

865233.70

PRIOR BILL

NET TOTAL

GROSS TOTAL

GAS-SCHEDULE C

GAS UNITS USED X THERMS PER UNIT = THERMS BILLED

CUSTOMER CHARGE	THERMS BY RATE BLOCKS & NET RATE PER THERM	Purchased Gas Adj.	GROSS AMOUNT	NET AMOUNT
\$15.00	\$.1630	Total Therms @		
	10000			
		COUNTY SURCHARGE		
		TOTAL		
		STATE TAX		
		CITY-COUNTY TAX		
		TOTAL GAS		

RATES

THERMS

AMOUNT \$

ELECTRIC - SCHEDULE P
SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page-

TOTAL ELECTRIC	865228.70	865228.70
Prior Bill(s)		
Rentals Incl. State Tax		
Dem. Hist. Rec. Chg.	5.00	5.00
TOTAL BILL	865233.70	865233.70

Federal Tax Identification # 52-0280210

MS-333 (7/94)

8/17/94 to 8/31/94

10/3/94

9/27/94

U S DEPT OF THE ARMY

DAAD 05-70-C-0096

ATTN STEAP-FE-B

ABERDEEN PRV GRD MD 21005

00 FLAN LVD CT

9722

6940

W C

Pay Company Total

9/27/94

Return This Stub With Payment

METER NUMBER

METER READINGS-INCLUDING CONSTANT PREVIOUS

UNITS- GAS-100 CU. FT. ELEC. - KWH

ELEC

20

40025000

39885000

140000

ELEC

22

46603000

41200000

5403000

ELEC

23

18778000

12770000

6008000

11551000

PRIOR BILL

GROSS TOTAL

813873.92

NET AMOUNT

813873.92

GAS-SCHEDULE C

GAS UNITS USED

X

THERMS PER UNIT

=

THERMS BILLED

CUSTOMER CHARGE

RATES

\$15.00

THERMS

\$1.630

10000

AMOUNT \$

Purchased Gas Adj.

Total Therms @

COUNTY SURCHARGE

TOTAL

STATE TAX

CITY-COUNTY TAX

TOTAL GAS

GROSS AMOUNT

813873.92

NET AMOUNT

813873.92

ELECTRIC - SCHEDULE P

SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page-

TOTAL ELECTRIC

813873.92

Prior Bill(s)

Rentals Incl. State Tax

Dem. Hist. Rec. Chg.

5.00

TOTAL BILL

813878.92

Federal Tax Identification # 52-0280210

M 7375 (7/94)

44-7375 (7A)41

10/3/94 TO 11/1/94

12/2/94

P.O. BOX 630632

BALTIMORE, MARYLAND 21263

U S DEPT OF THE ARMY

DAAD 05-70-C-0096

ATTN STEAP-FE-B

ABERDEEN PRV GRND MD 21005

9722

6940

WC

12/1/94

Return This Stub With Payment

DUE

12/1/94

METER NUMBER	METER READINGS-INCLUDING CONSTANT PREVIOUS	UNITS- GAS-100 CU. FT. ELEC. - KWH	GROSS AMOUNT	NET AMOUNT
--------------	--	------------------------------------	--------------	------------

ELEC	20	40331000	40189000	142000
ELEC	22	55546000	51598000	3588000
ELEC	23	29165000	24395000	4770000
				8500000

PRIOR BILL

NET TOTAL

GROSS TOTAL

GAS-SCHEDULE C

THERMS BILLED

THERMS PER UNIT

GAS UNITS USED

Purchased Gas Adj.

CUSTOMER CHARGE

RATES

THERMS

AMOUNT \$

THERMS BY RATE BLOCKS & NET RATE PER THERM

\$1630

10000

\$0844

COUNTY SURCHARGE

TOTAL

STATE TAX

CITY-COUNTY TAX

TOTAL GAS

Total Therms @

NET AMOUNT

GROSS AMOUNT

ELECTRIC - SCHEDULE P
SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page-

402940.13

TOTAL ELECTRIC

Prior Bill(s)

Rentals Incl. State Tax

Dem. Hist. Rec. Chg.

5.00

NET AMOUNT

GROSS AMOUNT

Federal Tax Identification # 52-0280210

M-7375 (7/94)

402945.13

TOTAL BILL

402945.13

11/1/96 TO 12/2/96
NEXT SCHEDULED READING DATE

1/3/95

DATE

1/4/95

P.O. BOX 630632
BALTIMORE, MARYLAND 21263

US DEPT OF THE ARMY
DAAD 05-70-C-0096
ATTN STEAP FE B
ABERDEEN PRV GRND MD 21005

5 MAIL AND
AA
9722
6940
WC

Pay Gross Total After

1/4/95

Return This Sub With Payment

METER READINGS-INCLUDING CONSTANT
PREVIOUS

METER NUMBER

UNITS- GAS-100 CU. FT.
ELEC. - KWH

GROSS
AMOUNT

NET
AMOUNT

ELEC
ELEC
ELEC

20
22
23

40415000
59653000
34569000

40331000
55546000
29165000

84000
4107000
5404000
9595000

404202.93

404202.93

PRIOR
BILL

GAS-SCHEDULE C

GAS UNITS
USED

X

THERMS
PER UNIT

=

THERMS
BILLED

CUSTOMER
CHARGE

THERMS BY RATE BLOCKS & NET RATE PER THERM

Purchased Gas Adj.
Total Therms @

GROSS
AMOUNT

NET
AMOUNT

RATES

THERMS

AMOUNT \$

\$15.00

\$1630

10000

\$0.0844

COUNTY SURCHARGE

TOTAL

STATE TAX

CITY-COUNTY TAX

TOTAL GAS

ELECTRIC - SCHEDULE P

SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page-

404197.93

404197.93

Prior Bills

Rentals Inc. State Tax

Dem. Hist. Rec. Chg.

5.00

5.00

Federal Tax Identification # 52-0280210

M-100 (9/94)

404202.93

404202.93

Return This Stub With Payment

MI-7375 (7P34)

METER READING DATES

1/31/95 to 3/2/95
NEXT SCHEDULED READING DATE

3/31/95

DUE

3/29/95

BALTIMORE GAS & ELECTRIC COMPANY

P.O. BOX 64844

BALTIMORE, MARYLAND 21264-4844

5600 MARYLAND BLVD *SECT AA
U S DEPT OF THE ARMY
DAAD 05-70-C-0096
ATTN STEAP-FE-B
ABERDEEN PRV GRND MD 21005

Pay Gross Total After

9726

6940

W C 3/29/95

Return This Stub With Payment

METER NUMBER	METER READINGS-INCLUDING CONSTANT PRESENT PREVIOUS	UNITS- GAS-100 CU. FT. ELEC. - KWH	GROSS AMOUNT	NET AMOUNT
ELEC 20	40845000	145000	583824.42	583824.42
ELEC 22	75311000	5620000		
ELEC 23	52193000	6509000		
		<u>12274000</u>	PRIOR BILL 512077.24	512077.24

GAS-SCHEDULE C

GAS UNITS
USEDX THERMS
PER UNIT= THERMS
BILLEDCUSTOMER
CHARGE

RATES

THERMS

AMOUNT \$

Purchased Gas Adj.

THERMS BY RATE BLOCKS & NET RATE PER THERM

\$15.00

\$1630

10000

\$0844

Total Therms @

COUNTY SURCHARGE

TOTAL

STATE TAX

CITY-COUNTY TAX

TOTAL GAS

-1

ELECTRIC - SCHEDULE P
SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page--

TOTAL ELECTRIC	583819.42	583819.42
Prior Bill(s)	512077.24	512077.24
Rentals Incl. State Tax		
Dem. Hist. Rec. Chg.	5.00	5.00
TOTAL BILL	1095901.66	1095901.66

METER READING DATES
 5/1/95 to 6/1/95
 NEXT SCHEDULED READING DATE
 6/30/95
 DUE
 7/24/95

BALTIMORE GAS & ELECTRIC COMPANY
 P.O. BOX 64844
 BALTIMORE, MARYLAND 21264-4844
 ABERDEEN PRV GRND MD 21005

U S DEPT OF THE ARMY
 DAAD 05-70-C-0096
 ATTN STEAP-FE-B

9726
 6940
 WC
 7/24/95

Pay Gross Total After
 CORRECTED BILL
 Return This Stub With Payment

METER NUMBER	METER READINGS-INCLUDING CONSTANT PRESENT	PREVIOUS	UNITS- GAS-100 CU. FT. ELEC. - KWH	GROSS AMOUNT	NET AMOUNT
ELEC 20	41135000	41135000	0	359991.79	359991.79
ELEC 22	86962000	83226000	3736000		
ELEC 23	70180000	64231000	5949000		
			9685000		
				PRIOR BILL	
				GROSS TOTAL	NET TOTAL

GAS-SCHEDULE C				THERMS BILLED	
GAS UNITS USED		THERMS X PER UNIT		THERMS BILLED	
CUSTOMER CHARGE				Purchased Gas Adj.	
THERMS BY RATE BLOCKS & NET RATE PER THERM				Total Therms @	
RATES	\$15.00	\$1630	\$0.844		
THERMS		10000			
AMOUNT \$					
				COUNTY SURCHARGE	
				TOTAL	
				STATE TAX	
				CITY-COUNTY TAX	
				TOTAL GAS	

ELECTRIC - SCHEDULE P			
SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA			
		Brought Forward from Attached Page--	
TOTAL ELECTRIC	467792.96	467792.96	
Prior Bill(s)			
Rentals Incl. State Tax			
Dem. Hist. Rec. Chg.	5.00	5.00	
TOTAL BILL	467797.79	467797.96	

367902-45

METER READING DATES
 6/30/95 TO 8/2/95
 NEXT SCHEDULED READING DATE
 8/31/95
 BALTIMORE GAS & ELECTRIC COMPANY
 P.O. BOX 64844
 BALTIMORE, MARYLAND 21264-4844
 5600 MARYLAND BLVD *SECT AA
 U S DEPT OF THE ARMY
 DAAD 05-70-C-0096
 ATTN STEAP-FE-B
 ABERDEEN PRV GRND MD 21005
 BALTIMORE GAS & Electric Company
 Pay Gross Total After
 9726
 6940
 WC
 9/1/95
 Return This Stub With Payment

METER NUMBER	METER READINGS-INCLUDING CONSTANT PRESENT	PREVIOUS	UNITS- GAS-100 CU. FT. ELEC.- KWH	GROSS AMOUNT	NET AMOUNT
ELEC 20	41135000	41135000	0	844161.01	844161.01
ELEC 22	97921000	91375000	6546000		
ELEC 23	83604000	76470000	7134000		
			13680000		
				PRIOR BILL 768633.45	768633.45

GAS-SCHEDULE C				GROSS TOTAL	NET TOTAL
CUSTOMER CHARGE				1612794.46	1612794.46
RATES	THERMS BY RATE BLOCKS & NET RATE PER THERM			GROSS AMOUNT	NET AMOUNT
THERMS	1587		\$.0801		
AMOUNT \$	10000				
COUNTY SURCHARGE					
TOTAL					
STATE TAX					
CITY-COUNTY TAX					
TOTAL GAS					

ELECTRIC - SCHEDULE P				GROSS TOTAL	NET TOTAL
TOTAL ELECTRIC				844156.01	844156.01
Prior Bill(s)				768633.45	768633.45
Renials Incl. State Tax					
Dem. Hist. Rec. Chg.				5.00	5.00
TOTAL BILL				1612794.46	1612794.46

SEE ATTACHED PAGE FOR SCHEDULE P BILLING DATA

Brought Forward from Attached Page-

(5616) 4554

44-38861-51518 (5617) - 7/95

**ATTACHMENT 8.8
NATURAL GAS BILLS**

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: OCTOBER 1993

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	09-24-93 TO 10-26-93	25	13.29
6860 BELARDI ROAD	08-27-93 TO 09-28-93	8,400	627.63
CARROLL ISLAND	09-13-93 TO 10-13-93	1,300	11.08
GRACES QUARTERS	10-06-93 TO 11-04-93	5,800	404.16
EDGEWOOD CONTRACT	10-01-93 TO 11-01-93	6,511,480	280,354.02
EA SUB TOTALS		6,527,005	281,410.18

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	09-16-93 TO 10-15-93	55	12.15
TOWER #6	09-16-93 TO 10-15-93	29	9.48
TOWER #7	09-17-93 TO 10-18-93	0	6.50
TOWER #8	09-17-93 TO 10-18-93	672	75.37
TOWER #9	09-17-93 TO 10-18-93	0	6.50
TOWER #12	09-20-93 TO 10-20-93	0	6.50
DEER CREEK	08-26-93 TO 09-28-93	142,700	8,999.69
301 OLDBAY LANE	09-27-93 TO 10-27-93	315	33.93
401 RICHARDS LANE	09-24-93 TO 10-26-93	0	11.50
PRIESTFORD ROAD	09-21-93 TO 10-20-93	10,500	1,091.65
300 N. PARADISE ROAD	09-27-93 TO 10-27-93	24,000	1,720.54
526 MICHEALSVILLE RD	09-17-93 TO 10-19-93	576	52.52
ABERDEEN CONTRACT	10-01-93 TO 11-01-93	9,558,000	455,563.84
TENNESSEE AVENUE	09-22-93 TO 10-21-93	12	7.74
ROUTE 297	09-24-93 TO 10-25-93	12	7.74
WATER & CONESTOGA R	09-09-93 TO 10-08-93	20	23.28
BAYVIEW BLVD	09-09-93 TO 10-08-93	20	11.47
GROVE POINT 55	09-07-93 TO 10-11-93	0	9.00
CRYSTAL BEACH 54	09-29-93 TO 10-27-93	0	9.00
AA SUB TOTALS		9,736,911	467,658.40
COMBINED EA & AA TOT		16,263,916	749,068.58

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: OCTOBER 1993

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	09-00-93 TO 10-00-93	0	0.00
140 HAWTHORNE DRIVE	09-28-93 TO 10-28-93	3,597	1,782.93
1570 STARK ROAD	09-28-93 TO 10-28-93	6,532	3,386.76
EA SUB TOTALS		10,129	5,169.69

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	09-24-93 TO 10-26-93	4,314	2,135.33
2600 ABERDEEN BLVD	09-24-93 TO 10-26-93	231	128.54
AA SUB TOTALS		4,545	2,263.87
COMBINED EA & AA TOT		14,674	7,433.56

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: NOVEMBER 1993

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	10-26-93 TO 11-24-93	110	19.25
6860 BELARDI ROAD	09-28-93 TO 10-28-93	8,400	618.14
CARROLL ISLAND	10-13-93 TO 11-11-93	800	65.66
GRACES QUARTERS	11-04-93 TO 12-06-93	6,700	465.10
EDGEWOOD CONTRACT	11-01-93 TO 12-02-93	6,330,680	269,076.27
EA SUB TOTALS		6,346,690	270,244.42

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	10-15-93 TO 11-15-93	158	22.88
TOWER #6	10-15-93 TO 11-15-93	0	6.64
TOWER #7	10-18-93 TO 11-16-93	29	9.58
TOWER #8	10-18-93 TO 11-16-93	1,042	114.43
TOWER #9	10-18-93 TO 11-16-93	13	7.94
TOWER #12	10-20-93 TO 11-17-93	0	6.60
DEER CREEK	09-28-93 TO 10-27-93	105,200	7,973.68
301 OLDBAY LANE	10-27-93 TO 11-29-93	330	34.73
401 RICHARDS LANE	10-26-93 TO 11-24-93	0	11.50
PRIESTFORD ROAD	10-20-93 TO 11-18-93	13,950	1,336.30
300 N. PARADISE ROAD	10-27-93 TO 11-29-93	31,500	2,228.48
526 MICHEALSVILLE RD	10-19-93 TO 11-17-93	956	78.79
ABERDEEN CONTRACT	11-01-93 TO 12-02-93	10,469,000	491,974.38
TENNESSEE AVENUE	10-21-93 TO 11-19-93	12	7.74
ROUTE 297	10-25-93 TO 11-23-93	12	7.74
WATER & CONESTOGA R	10-08-93 TO 11-08-93	20	23.44
BAYVIEW BLVD	10-08-93 TO 11-08-93	20	11.46
GROVE POINT 55	10-11-93 TO 11-08-93	0	9.00
CRYSTAL BEACH 54	10-27-93 TO 11-26-93	0	9.00
AA SUB TOTALS		10,622,242	503,874.31
COMBINED EA & AA TOT		16,968,932	774,118.73

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: NOVEMBER 1993

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	09-28-93 TO 10-28-93	0	3,673.52
140 HAWTHORNE DRIVE	10-28-93 TO 11-30-93	2,490	1,258.26
1570 STARK ROAD	10-28-93 TO 11-30-93	15,110	7,515.67
EA SUB TOTALS		17,600	12,447.45

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	10-26-93 TO 11-24-93	6,721	3,370.00
2600 ABERDEEN BLVD	10-26-93 TO 11-24-93	346	187.76
AA SUB TOTALS		7,067	3,557.76
COMBINED EA & AA TOT		24,667	16,005.21

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: DECEMBER 1993

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	11-24-93 TO 12-24-93	752	64.43
6860 BELARDI ROAD	10-28-93 TO 11-30-93	15,400	922.40
CARROLL ISLAND	11-11-93 TO 12-13-93	1,800	134.34
GRACES QUARTERS	12-06-93 TO 01-06-94	8,300	573.42
EDGEWOOD CONTRACT	12-02-93 TO 01-03-94	6,723,200	274,573.65
EA SUB TOTALS		6,749,452	276,268.24

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	11-15-93 TO 12-15-93	582	67.04
TOWER #6	11-15-93 TO 12-15-93	0	6.50
TOWER #7	11-16-93 TO 12-16-93	24	8.97
TOWER #8	11-16-93 TO 12-16-93	1,634	173.19
TOWER #9	11-16-93 TO 12-16-93	20	8.56
TOWER #12	11-17-93 TO 12-17-93	0	6.42
DEER CREEK	11-18-93 TO 12-20-93	121,100	8,543.81
301 OLDBAY LANE	11-29-93 TO 12-28-93	282	31.35
401 RICHARDS LANE	11-24-93 TO 12-24-93	17	12.70
PRIESTFORD ROAD	11-23-93 TO 12-16-93	15,600	1,381.23
300 N. PARADISE ROAD	11-29-93 TO 12-28-93	25,600	1,813.23
526 MICHEALSVILLE RD	11-17-93 TO 12-17-93	3468	256.77
ABERDEEN CONTRACT	12-02-93 TO 01-03-94	11,773,000	540,944.45
TENNESSEE AVENUE	11-23-93 TO 12-22-93	12	7.74
ROUTE 297	11-23-93 TO 12-22-93	12	7.86
WATER & CONESTOGA R	11-08-93 TO 12-09-93	20	11.61
BAYVIEW BLVD	11-08-93 TO 12-09-93	20	11.44
GROVE POINT 55	11-08-93 TO 12-06-93	0	9.00
CRYSTAL BEACH 54	11-26-93 TO 12-28-93	0	9.14
AA SUB TOTALS		11,941,391	553,311.01
COMBINED EA & AA TOT		18,690,843	829,579.25

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: DECEMBER 1993

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	10-28-93 TO 11-30-93	947	559.10
140 HAWTHORNE DRIVE	11-30-93 TO 12-29-93	3,132	1,575.99
1570 STARK ROAD	11-30-93 TO 12-29-93	19,145	9,279.98
EA SUB TOTALS		23,224	11,415.07

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	11-24-93 TO 12-24-93	9,450	4,724.88
2600 ABERDEEN BLVD	11-24-93 TO 12-24-93	807	417.21
AA SUB TOTALS		10,257	5,142.09
COMBINED EA & AA TOT		33,481	16,557.16

*earlier
summarized*

Sep

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: JANUARY 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	12-24-93 TO 01-25-94	995	81.53
6860 BELARDI ROAD	11-30-93 TO 12-29-93	13,600	1,119.35
CARROLL ISLAND	12-13-93 TO 01-12-94	2,200	160.44
GRACES QUARTERS	01-06-94 TO 02-03-94	9,400	647.88
EDGEWOOD CONTRACT	01-03-94 TO 01-31-94	6,514,800	277,965.58
EA SUB TOTALS		6,540,995	279,974.78

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	12-15-93 TO 01-17-94	2,565	270.29
TOWER #6	12-15-93 TO 01-17-94	542	62.06
TOWER #7	12-16-93 TO 01-18-94	13	7.84
TOWER #8	12-16-93 TO 01-18-94	2,060	217.64
TOWER #9	12-16-93 TO 01-18-94	11	7.64
TOWER #12	12-17-93 TO 01-19-94	0	6.50
DEER CREEK	11-29-93 TO 12-29-93	56,100	5,939.77
301 OLDBAY LANE	12-28-93 TO 01-26-94	283	31.43
401 RICHARDS LANE	12-24-93 TO 01-25-94	56	15.44
PRIESTFORD ROAD	12-20-93 TO 01-24-94	20,580	1,581.57
300 N. PARADISE ROAD	12-28-93 TO 01-26-94	32,800	2,319.96
526 MICHAELSVILLE RD	12-17-93 TO 01-18-94	4550	331.74
ABERDEEN CONTRACT	01-03-94 TO 01-31-94	12,023,000	591,463.72
TENNESSEE AVENUE	12-20-93 TO 01-21-94	12	7.74
ROUTE 297	12-20-93 TO 01-24-94	12	7.74
WATER & CONESTOGA R	12-09-93 TO 01-11-94	20	11.44
BAYVIEW BLVD	12-09-93 TO 01-11-94	20	23.59
GROVE POINT 55	12-06-93 TO 01-10-94	0	9.14
CRYSTAL BEACH 54	12-28-93 TO 01-27-94	0	9.00
AA SUB TOTALS		12,142,624	602,324.25
COMBINED EA & AA TOT		18,683,619	882,299.03

SUBJECT: DISTRIBUTION OF GAS CHARGE DATE: JANUARY 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	11-30-93 TO 12-29-93	1,193	616.91
140 HAWTHORNE DRIVE	12-29-93 TO 01-27-94	525	295.40
1570 STARK ROAD	12-29-93 TO 01-27-94	28,327	14,389.15
EA SUB TOTALS		30,045	15,301.46

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	11-24-93 TO 12-24-93	9,450	4,724.88
2600 ABERDEEN BLVD	12-24-93 TO 01-25-94	2,014	1,090.68
AA SUB TOTALS		11,464	5,815.56
COMBINED EA & AA TOT		41,509	21,117.02

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: FEBRUARY 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	01-25-94 TO 02-24-94	78	17.00
6860 BELARDI ROAD	12-29-93 TO 01-27-94	44,000	2,351.30
CARROLL ISLAND	01-12-94 TO 02-10-94	2,100	153.68
GRACES QUARTERS	02-03-94 TO 03-07-94	9,400	657.58
EDGEWOOD CONTRACT	01-31-94 TO 03-02-94	6,789,200	285,475.42
EA SUB TOTALS		6,844,778	288,654.98

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	01-17-94 TO 02-15-94	2,545	267.35
TOWER #6	01-17-94 TO 02-15-94	577	65.64
TOWER #7	01-18-94 TO 02-16-94	23	8.86
TOWER #8	01-18-94 TO 02-16-94	1,848	195.92
TOWER #9	01-18-94 TO 02-16-94	5	7.02
TOWER #12	01-19-94 TO 02-17-94	0	6.50
DEER CREEK	12-29-93 TO 01-28-94	91,600	8,305.01
301 OLDBAY LANE	01-26-94 TO 02-25-94	290	31.92
401 RICHARDS LANE	01-25-94 TO 02-24-94	2,861	212.86
PRIESTFORD ROAD	01-21-94 TO 02-16-94	21,960	1,963.43
300 N. PARADISE ROAD	01-26-94 TO 02-25-94	35,700	2,524.07
526 MICHAELSVILLE RD	01-18-94 TO 02-16-94	2449	187.38
ABERDEEN CONTRACT	01-31-94 TO 03-02-94	12,342,000	588,826.96
TENNESSEE AVENUE	01-21-94 TO 02-22-94	12	7.74
ROUTE 297	01-24-94 TO 02-24-94	12	7.74
WATER & CONESTOGA R	01-11-94 TO 02-10-94	20	11.93
BAYVIEW BLVD	01-11-94 TO 02-10-94	20	11.93
GROVE POINT 55	01-10-94 TO 02-10-94	0	6.14
CRYSTAL BEACH 54	01-27-94 TO 02-24-94	0	9.00
AA SUB TOTALS		12,501,922	602,657.40
COMBINED EA & AA TOT		19,346,700	891,312.38

SUBJECT: DISTRIBUTION OF GAS CHARGE DATE: FEBRUARY 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	12-29-93 TO 01-27-94	1,286	701.85
140 HAWTHORNE DRIVE	01-27-94 TO 02-28-94	2,068	1,130.89
1570 STARK ROAD	01-27-94 TO 02-28-94	27,023	13,921.54
EA SUB TOTALS		30,377	15,754.28

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	12-24-93 TO 01-25-94	17,727	8,946.52
2600 ABERDEEN BLVD	01-25-94 TO 02-24-94	1,507	828.18
AA SUB TOTALS		19,234	9,774.70
COMBINED EA & AA TOT		49,611	25,528.98

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: MARCH 1994

1. EDGEWOOD AREA	DATE	KWH	COST
601 HANSON ROAD	02-24-94 TO 03-25-94	536	49.23
6860 BELARDI ROAD	01-27-94 TO 02-28-94	49,000	2,522.70
CARROLL ISLAND	02-10-94 TO 03-09-94	700	58.90
GRACES QUARTERS	03-07-94 TO 04-05-94	7,200	498.94
EDGEWOOD CONTRACT	03-02-94 TO 03-31-94	6,504,440	273,555.46
EA SUB TOTALS		6,561,876	276,685.23

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	02-15-94 TO 03-17-94	1,612	171.73
TOWER #6	02-15-94 TO 03-17-94	3,692	374.69
TOWER #7 (CORRECTED	12-16-93 TO 03-18-94	0	3.23
TOWER #8	02-16-94 TO 03-18-94	2,293	241.51
TOWER #9 (CORRECTED	12-16-93 TO 03-18-94	2	5.49
TOWER #12	02-17-94 TO 03-18-94	0	6.50
DEER CREEK	01-28-94 TO 03-01-94	137,900	10,495.37
301 OLDBAY LANE	02-25-94 TO 03-28-94	300	32.62
401 RICHARDS LANE	02-24-94 TO 03-25-94	1,060	89.29
PRIESTFORD ROAD	02-22-94 TO 03-22-94	17,660	1,692.67
300 N. PARADISE ROAD	02-25-94 TO 03-28-94	32,900	2,327.01
526 MICHAELSVILLE RD	02-16-94 TO 03-18-94	2233	168.66
ABERDEEN CONTRACT	03-02-94 TO 03-31-94	10,906,000	535,739.08
TENNESSEE AVENUE	02-22-94 TO 03-23-94	12	7.74
ROUTE 297	02-22-94 TO 03-25-94	12	7.86
WATER & CONESTOGA R	02-10-94 TO 03-11-94	20	12.50
BAYVIEW BLVD	02-10-94 TO 03-11-94	20	12.50
GROVE POINT 55	02-10-94 TO 03-08-94	0	9.00
CRYSTAL BEACH 54	02-24-94 TO 03-29-94	0	9.00
AA SUB TOTALS		11,105,716	551,406.45
COMBINED EA & AA TOT		17,667,592	828,091.68

SUBJECT: DISTRIBUTION OF GAS CHARGE DATE: FEBRUARY 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	01-27-94 TO 02-28-94	1,406	773.68
140 HAWTHORNE DRIVE	02-28-94 TO 03-29-94	1,251	707.68
1570 STARK ROAD	02-28-94 TO 03-29-94	29,630	15,820.99
EA SUB TOTALS		32,287	17,302.35

2. ABERDEEN AREA	DATE	THERMS	COST
CHESAPEAKE ROAD	01-25-94 TO 02-24-94	13,371	6,965.03
2600 ABERDEEN BLVD	02-24-94 TO 03-25-94	2,450	1,371.57
AA SUB TOTALS		15,821	8,336.60
COMBINED EA & AA TOT		48,108	25,638.95

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: APRIL 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	03-25-94 TO 04-25-94	5	11.86
6860 BELARDI ROAD	02-28-94 TO 03-29-94	12,600	1,135.73
CARROLL ISLAND	03-09-94 TO 04-12-94	1,200	93.62
GRACES QUARTERS	04-05-94 TO 05-04-94	5,900	410.94
EDGEWOOD CONTRACT	03-31-94 TO 04-29-94	5,831,240	252,806.29
EA SUB TOTALS		5,850,945	254,458.44

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	03-17-94 TO 04-18-94	116	18.40
TOWER #6	03-17-94 TO 04-18-94	29	9.48
TOWER #7	03-18-94 TO 04-19-94	0	6.50
TOWER #8	03-18-94 TO 04-19-94	1,018	110.84
TOWER #9	03-18-94 TO 04-19-94	0	6.50
TOWER #12	03-18-94 TO 04-20-94	0	6.50
DEER CREEK	03-01-94 TO 03-22-94	74,600	6,490.86
301 OLDBAY LANE	03-28-94 TO 04-26-94	304	32.90
401 RICHARDS LANE	03-25-94 TO 04-25-94	63	12.74
PRIESTFORD ROAD	03-22-94 TO 04-21-94	18,420	1,742.30
300 N. PARADISE ROAD	03-28-94 TO 04-26-94	21,900	1,552.83
526 MICHAELSVILLE RD	03-18-94 TO 04-18-94	543	49.72
ABERDEEN CONTRACT	03-31-94 TO 04-29-94	8,932,000	437,157.55
TENNESSEE AVENUE	03-23-94 TO 04-22-94	12	7.74
ROUTE 297	03-25-94 TO 04-26-94	12	7.74
WATER & CONESTOGA R	03-11-94 TO 04-12-94	20	12.50
BAYVIEW BLVD	03-11-94 TO 04-12-94	20	12.50
GROVE POINT 55	03-08-94 TO 04-12-94	0	9.00
CRYSTAL BEACH 54	03-29-94 TO 04-28-94	0	9.00
AA SUB TOTALS		9,049,057	447,255.60
COMBINED EA & AA TOT		14,900,002	701,714.04

SUBJECT: DISTRIBUTION OF GAS CHARGE DATE: APRIL 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	02-28-94 TO 03-29-94	1,467	827.28
140 HAWTHORNE DRIVE	03-29-94 TO 04-27-94	720	419.06
1570 STARK ROAD	03-29-94 TO 04-27-94	458	285.64
EA SUB TOTALS		2,645	1,531.98

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	02-24-94 TO 03-25-94	11,674	6,347.32
2600 ABERDEEN BLVD	03-25-94 TO 04-25-94	736	428.04
AA SUB TOTALS		12,410	6,775.36
COMBINED EA & AA TOT		15,055	8,307.34

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: MAY 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	04-25-94 TO 05-24-94	49	14.95
6860 BELARDI ROAD	03-29-94 TO 04-27-94	14,000	828.22
CARROLL ISLAND	04-12-94 TO 05-11-94	600	51.24
GRACES QUARTERS	05-04-94 TO 06-06-94	6,200	585.25
EDGEWOOD CONTRACT	04-29-94 TO 05-29-94	7,280,016	0.00
EA SUB TOTALS		20,849 7,301,009	1,479.66 313,648.37 315,128.03

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	04-18-94 TO 05-17-94	37	10.30
TOWER #6	04-18-94 TO 05-17-94	27	9.28
TOWER #7	04-19-94 TO 05-18-94	1	3.38
TOWER #8	04-19-94 TO 05-18-94	686	76.81
TOWER #9	04-19-94 TO 05-17-94	0	1.01
TOWER #12	04-20-94 TO 05-19-94	0	6.50
DEER CREEK	03-22-94 TO 04-21-94	104,300	8,374.44
301 OLDBAY LANE	04-26-94 TO 05-25-94	267	30.30
401 RICHARDS LANE	04-25-94 TO 05-24-94	47	14.81
PRIESTFORD ROAD	04-21-94 TO 05-20-94	9,980	1,148.21
300 N. PARADISE ROAD	04-26-94 TO 05-25-94	20,000	1,442.34
526 MICHAELSVILLE RD	04-18-94 TO 05-17-94	262	29.94
ABERDEEN CONTRACT	04-29-94 TO 06-01-94	9,920,000	472,376.31
TENNESSEE AVENUE	04-22-94 TO 05-23-94	12	7.74
ROUTE 297	04-26-94 TO 05-25-94	12	7.74
WATER & CONESTOGA R	04-12-94 TO 05-11-94	20	12.50
BAYVIEW BLVD	04-12-94 TO 05-11-94	20	12.50
GROVE POINT 55	04-12-94 TO 05-10-94	0	9.00
CRYSTAL BEACH 54	04-28-94 TO 05-26-94	0	9.00
AA SUB TOTALS		10,055,671	483,582.11
COMBINED EA & AA TOT		10,076,520 17,356.680	485,061.77 798,710.14

SUBJECT: DISTRIBUTION OF GAS CHARGE DATE: MAY 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	03-29-94 TO 04-27-94	690	402.23
140 HAWTHORNE DRIVE	04-27-94 TO 05-26-94	263	159.49
1570 STARK ROAD	04-27-94 TO 05-26-94	5,466	3,168.93
EA SUB TOTALS		6,419	3,730.65
2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	03-25-94 TO 04-25-94	6,522	3,675.15
2600 ABERDEEN BLVD	04-25-94 TO 05-24-94	103	0.00
AA SUB TOTALS		6,625	3,675.15
COMBINED EA & AA TOT		13,044	7,405.80

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: JUNE 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	05-24-94 TO 06-24-94	58	17.08
6860 BELARDI ROAD	04-27-94 TO 05-26-94	9,800	683.65
CARROLL ISLAND	05-11-94 TO 06-13-94	400	48.52
GRACES QUARTERS	06-06-94 TO 07-06-94	5,800	539.76
EDGEWOOD CONTRACT	04-29-94 TO 06-01-94 <i>8,494,080</i>	7,280,160	313,648.37 <i>568,295.88</i>
EA SUB TOTALS		7,296,218 <i>8,510,138</i>	314,937.38 <i>569,584.89</i>

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	05-17-94 TO 06-16-94	35	10.29
TOWER #6	05-17-94 TO 06-16-94	32	9.97
TOWER #7	05-18-94 TO 06-17-94	0	6.50
TOWER #8	05-18-94 TO 06-17-94	450	55.09
TOWER #9	05-17-94 TO 06-17-94	0	6.50
TOWER #12	05-19-94 TO 06-20-94	0	6.50
DEER CREEK	04-21-94 TO 05-20-94	97,900	5,813.85
301 OLDBAY LANE	05-25-94 TO 06-27-94	383	48.37
401 RICHARDS LANE	05-24-94 TO 06-24-94	123	23.34
PRIESTFORD ROAD	05-20-94 TO 06-21-94	7,710	954.95
300 N. PARADISE ROAD	05-25-94 TO 06-27-94	23,900	2,311.88
526 MICHAELSVILLE RD	05-17-94 TO 06-17-94	191	29.89
ABERDEEN CONTRACT	06-01-94 TO 06-30-94	11,445,000	833,260.63
TENNESSEE AVENUE	05-23-94 TO 06-22-94	12	7.80
ROUTE 297	05-25-94 TO 06-24-94	12	7.80
WATER & CONESTOGA R	05-11-94 TO 06-10-94	20	12.50
BAYVIEW BLVD	05-11-94 TO 06-10-94	20	12.50
GROVE POINT 55	05-10-94 TO 06-08-94	0	9.00
CRYSTAL BEACH 54	05-26-94 TO 06-28-94	0	9.14
AA SUB TOTALS		11,575,788	842,596.50
COMBINED EA & AA TOT		18,872,006 <i>20,085,926</i>	1,157,533.88 <i>1,412,181.39</i>

SUBJECT: DISTRIBUTION OF GAS CHARGE DATE: JUNE 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	04-27-94 TO 05-26-94	721	411.12
140 HAWTHORNE DRIVE	05-26-94 TO 06-28-94	392	210.33
1570 STARK ROAD	05-26-94 TO 06-28-94	3,668	2,034.21
EA SUB TOTALS		4,781	2,655.66

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	04-25-94 TO 05-24-94	3,940	2,179.64
2600 ABERDEEN BLVD	05-24-94 TO 06-24-94	933	0.00
AA SUB TOTALS		4,873	2,179.64
COMBINED EA & AA TOT		9,654	4,835.30

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: JULY 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	06-24-94 TO 07-26-94	69	18.05
6860 BELARDI ROAD	05-26-94 TO 06-28-94	13,499	702.02
CARROLL ISLAND	06-13-94 TO 07-13-94	1,321	57.78
GRACES QUARTERS	07-06-94 TO 08-04-94	5,700	530.66
EDGEWOOD CONTRACT	06-30-94 TO 08-01-94	10,233,560	626,265.31
EDGEWOOD COMMISSARY	06-30-94 TO 08-01-94	(2,880)	(176.25)
EA SUB TOTALS		10,251,269	627,397.57

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	06-16-94 TO 07-18-94	39	10.72
TOWER #6	06-16-94 TO 07-18-94	29	9.64
TOWER #7	06-17-94 TO 07-19-94	0	6.50
TOWER #8	06-17-94 TO 07-19-94	576	68.69
TOWER #9	06-17-94 TO 07-19-94	0	6.50
TOWER #12	06-20-94 TO 07-20-94	0	6.50
DEER CREEK	05-20-94 TO 06-21-94	120,000	8,562.19
301 OLDBAY LANE	06-27-94 TO 07-27-94	524	61.17
401 RICHARDS LANE	06-24-94 TO 07-26-94	36	14.92
PRIESTFORD ROAD	06-21-94 TO 07-21-94	6,900	820.97
300 N. PARADISE ROAD	06-27-94 TO 07-27-94	20,600	1,964.17
526 MICHAELSVILLE RD	06-17-94 TO 07-19-94	215	32.34
ABERDEEN CONTRACT	06-30-94 TO 08-01-94	12,841,000	865,233.70
TENNESSEE AVENUE	06-22-94 TO 07-22-94	12	7.80
ROUTE 297	06-24-94 TO 07-26-94	12	7.80
WATER & CONESTOGA RDS	06-10-94 TO 07-12-94	20	12.50
BAYVIEW BLVD	06-10-94 TO 07-12-94	20	12.50
GROVE POINT 55	06-08-94 TO 07-11-94	0	9.00
CRYSTAL BEACH 54	06-28-94 TO 07-27-94	0	9.00
ABERDEEN COMMISSARY	06-01-94 TO 08-01-94	(115,215)	(7,763.30)
AA SUB TOTALS		12,874,768	869,093.31
COMBINED EA & AA TOT		23,126,037	1,496,490.88

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: JULY 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	05-26-94 TO 06-28-94	1,349	685.15
140 HAWTHORNE DRIVE	06-28-94 TO 07-28-94	1,031	511.74
1570 STARK ROAD	06-28-94 TO 07-28-94	2,747	1,405.43
EA SUB TOTALS		5,127	2,602.32

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	05-24-94 TO 06-24-94	2,507	1,300.63
2600 ABERDEEN BLVD	06-24-94 TO 07-26-94	348	0.00 (credit)
AA SUB TOTALS		2,855	1,300.63
COMBINED EA & AA TOT		7,982	3,902.95

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: AUGUST 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	07-26-94 TO 08-25-94	2	11.70
6860 BELARDI ROAD	06-28-94 TO 07-28-94	11,800	1,331.99
CARROLL ISLAND	07-13-94 TO 08-11-94	1,300	129.91
GRACES QUARTERS	08-04-94 TO 09-06-94	5,700	530.66
EDGEWOOD CONTRACT	08-01-94 TO 08-31-94	8,776,240	566,042.12
EDGEWOOD COMMISSARY	08-01-94 TO 08-31-94	(8,160)	(526.30)
EA SUB TOTALS		8,786,882	567,520.08

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	07-18-94 TO 08-16-94	29	9.64
TOWER #6	07-18-94 TO 08-16-94	30	9.75
TOWER #7	07-19-94 TO 08-17-94	0	6.50
TOWER #8	07-19-94 TO 08-17-94	467	56.92
TOWER #9	07-19-94 TO 08-17-94	0	6.50
TOWER #12	07-20-94 TO 08-18-94	0	6.50
DEER CREEK	06-21-94 TO 07-21-94	114,600	8,676.10
301 OLDBAY LANE	07-27-94 TO 08-26-94	268	36.91
401 RICHARDS LANE	07-26-94 TO 08-25-94	40	15.30
PRIESTFORD ROAD	07-21-94 TO 08-19-94	8,130	976.87
300 N. PARADISE ROAD	07-27-94 TO 08-26-94	19,700	1,878.87
526 MICHAELSVILLE RD	07-19-94 TO 08-17-94	174	28.46
ABERDEEN CONTRACT	08-01-94 TO 08-31-94	11,551,000	813,878.92
TENNESSEE AVENUE	07-22-94 TO 08-22-94	12	7.80
ROUTE 297	07-26-94 TO 08-24-94	12	7.80
WATER & CONESTOGA RDS	07-12-94 TO 08-10-94	20	12.50
BAYVIEW BLVD	07-12-94 TO 08-10-94	20	12.50
GROVE POINT 55	07-11-94 TO 08-09-94	0	9.00
CRYSTAL BEACH 54	07-27-94 TO 08-29-94	0	9.00
ABERDEEN COMMISSARY	08-01-94 TO 08-31-94	(244,228)	(17,208.30)
AA SUB TOTALS		11,450,274	808,437.54
COMBINED EA & AA TOT		20,237,156	1,375,957.62

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: AUGUST 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	11-30-94 TO 07-28-94	2,915	0.00 (credit)
140 HAWTHORNE DRIVE	06-28-94 TO 08-29-94	1,043	0.00 (credit)
1570 STARK ROAD	07-28-94 TO 08-29-94	3,108	1,573.70
EA SUB TOTALS		7,066	1,573.70

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	06-24-94 TO 07-26-94	2,056	1,005.58
2600 ABERDEEN BLVD	07-26-94 TO 08-25-94	-310 8/2	41.49 (credit)
AA SUB TOTALS		2,366	1,047.07
COMBINED EA & AA TOT		9,432	2,620.77

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: SEPTEMBER 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	08-25-94 TO 09-26-94	66	17.76
6860 BELARDI ROAD	07-28-94 TO 08-29-94	11,800	1,306.39
CARROLL ISLAND	08-11-94 TO 09-13-94	1,500	148.13
GRACES QUARTERS	09-06-94 TO 10-06-94	5,800	395.69
EDGEWOOD CONTRACT	08-01-94 TO 10-03-94	8,434,600	516,865.11
EDGEWOOD COMMISSARY	08-01-94 TO 08-31-94	(5,760)	(352.97)
EA SUB TOTALS		8,448,006	518,380.11

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	08-16-94 TO 09-15-94	31	9.86
TOWER #6	08-16-94 TO 09-15-94	98	17.09
TOWER #7	08-17-94 TO 09-16-94	0	0.00 (credit)
TOWER #8	08-17-94 TO 09-16-94	396	49.25
TOWER #9	08-17-94 TO 09-16-94	0	6.50
TOWER #12	08-18-94 TO 09-19-94	0	6.50
DEER CREEK	07-21-94 TO 08-19-94	95,000	8,221.88
301 OLDBAY LANE	08-26-94 TO 09-27-94	380	47.52
401 RICHARDS LANE	08-25-94 TO 09-27-94	20	13.40
PRIESTFORD ROAD	08-19-94 TO 09-21-94	8,990	1,088.90
300 N. PARADISE ROAD	08-26-94 TO 09-27-94	22,900	2,182.20
526 MICHAELSVILLE RD	08-17-94 TO 09-19-94	339	43.64
ABERDEEN CONTRACT	08-31-94 TO 10-03-94	11,136,000	744,529.83
TENNESSEE AVENUE	08-22-94 TO 09-21-94	12	7.80
ROUTE 297	08-24-94 TO 09-21-94	12	7.80
WATER & CONESTOGA RDS	08-10-94 TO 09-09-94	20	12.50
BAYVIEW BLVD	08-10-94 TO 09-09-94	20	12.50
GROVE POINT 55	08-09-94 TO 09-12-94	0	9.00
CRYSTAL BEACH 54	08-29-94 TO 09-28-94	0	9.00
ABERDEEN COMMISSARY	08-31-94 TO 10-03-94	(250,221)	(16,729.28)
AA SUB TOTALS		11,013,997	739,545.89
COMBINED EA & AA TOT		19,462,003	1,257,926.00

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: SEPTEMBER 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	07-28-94 TO 08-29-94	714	0.00 (credit)
140 HAWTHORNE DRIVE	08-29-94 TO 09-28-94	5,078	1,925.51
1570 STARK ROAD	08-29-94 TO 09-28-94	2,448	1,226.67
EA SUB TOTALS		8,240	3,152.18

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	07-26-94 TO 08-25-94	2,001	970.28
2600 ABERDEEN BLVD	08-25-94 TO 09-26-94	126	0.00 (credit)
AA SUB TOTALS		2,127	970.28
COMBINED EA & AA TOT		10,367	4,122.46

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: OCTOBER 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	09-26-94 TO 10-26-94	189	24.53
6860 BELARDI ROAD	08-29-94 TO 09-28-94	22,000	1,835.29
CARROLL ISLAND	09-13-94 TO 10-13-94	1,500	110.87
1900 NUTTAL AVE	09-28-94 TO 10-28-94	259,420	69,472.04
GRACES QUARTERS	10-06-94 TO 11-04-94	6,700	450.69
EDGEWOOD CONTRACT	10-03-94 TO 11-01-94	5,955,120	249,230.33
EDGEWOOD COMMISSARY	10-03-94 TO 11-01-94	(1,920)	(80.35)
EA SUB TOTALS		6,243,009	321,043.40

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	09-15-94 TO 10-14-94	36	10.20
TOWER #6	09-15-94 TO 10-14-94	360	43.40
TOWER #7	04-19-94 TO 10-17-94	0	6.61
TOWER #8	09-16-94 TO 10-17-94	432	50.79
TOWER #9	09-16-94 TO 10-17-94	0	6.50
TOWER #12	09-19-94 TO 10-18-94	0	6.50
DEER CREEK	08-19-94 TO 09-21-94	108,600	6,217.25
301 OLDBAY LANE	09-27-94 TO 10-27-94	322	33.69
401 RICHARDS LANE	09-26-94 TO 10-26-94	44	14.54
PRIESTFORD ROAD	09-21-94 TO 10-20-94	8,960	1,056.59
300 N. PARADISE ROAD	09-27-94 TO 10-27-94	21,400	1,486.39
526 MICHAELSVILLE RD	09-19-94 TO 10-19-94	144	21.43
ABERDEEN CONTRACT	10-03-94 TO 11-01-94	8,500,000	402,945.13
TENNESSEE AVENUE	09-21-94 TO 10-20-94	12	7.74
ROUTE 297	09-23-94 TO 10-24-94	12	7.74
WATER & CONESTOGA RDS	09-09-94 TO 10-11-94	20	12.50
BAYVIEW BLVD	09-09-94 TO 10-11-94	20	12.50
GROVE POINT 55	10-11-94 TO 11-09-94	0	18.14
CRYSTAL BEACH 54	09-28-94 TO 10-28-94	0	9.00
ABERDEEN COMMISSARY	10-03-94 TO 11-01-94	(248,401)	(11,775.45)
AA SUB TOTALS		8,391,961	400,191.19
COMBINED EA & AA TOT		14,634,970	721,234.59

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: OCTOBER 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	08-29-94 TO 09-28-94	3,311	0.00 (credit)
140 HAWTHORNE DRIVE	09-28-94 TO 10-24-94	1,039	0.00 (credit)
1570 STARK ROAD	09-28-94 TO 10-28-94	2,512	1,173.93
EA SUB TOTALS		6,862	1,173.93

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	08-25-94 TO 09-26-94	2,480	1,246.87
2600 ABERDEEN BLVD	09-26-94 TO 10-26-94	132	0.00 (credit)
AA SUB TOTALS		2,612	1,246.87
COMBINED EA & AA TOT		9,474	2,420.80

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: NOVEMBER 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	10-26-94 TO 11-28-94	30	13.55
6860 BELARDI ROAD	09-28-94 TO 10-28-94	8,400	593.74
CARROLL ISLAND	10-13-94 TO 11-11-94	1,500	109.83
1900 NUTTAL AVE	10-28-94 TO 11-30-94	69,440	4,361.08
GRACES QUARTERS	11-04-94 TO 12-06-94	7,800	522.79
EDGEWOOD CONTRACT	11-01-94 TO 12-03-94	6,515,120	269,177.72
EDGEWOOD COMMISSARY	11-01-94 TO 12-03-94	(4,320)	(178.49)
EA SUB TOTALS		6,597,970	274,600.22

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	10-14-94 TO 11-14-94	38	10.41
TOWER #6	10-14-94 TO 11-14-94	743	82.65
TOWER #7	10-17-94 TO 11-15-94	0	6.50
TOWER #8	10-17-94 TO 11-15-94	674	75.58
TOWER #9	10-17-94 TO 11-15-94	0	6.50
TOWER #12	10-18-94 TO 11-16-94	0	6.50
DEER CREEK	09-21-94 TO 10-20-94	90,400	6,130.13
301 OLDBAY LANE	10-27-94 TO 11-29-94	337	34.49
401 RICHARDS LANE	10-26-94 TO 11-28-94	20	12.87
PRIESTFORD ROAD	10-20-94 TO 11-18-94	10,480	1,141.58
300 N. PARADISE ROAD	10-27-94 TO 11-29-94	29,200	2,002.94
526 MICHAELSVILLE RD	10-19-94 TO 11-17-94	1027	81.55
ABERDEEN CONTRACT	11-01-94 TO 12-02-94	9,595,000	404,202.93
TENNESSEE AVENUE	10-20-94 TO 11-18-94	12	7.74
ROUTE 297	10-24-94 TO 11-22-94	12	7.74
WATER & CONESTOGA RDS	10-11-94 TO 11-08-94	20	12.52
BAYVIEW BLVD	10-11-94 TO 11-08-94	20	12.52
GROVE POINT 55	11-09-94 TO 12-11-94	0	0.00
CRYSTAL BEACH 54	10-28-94 TO 11-28-94	0	9.14
ABERDEEN COMMISSARY	11-01-94 TO 12-02-94	(191,134)	(8,051.71)
AA SUB TOTALS		9,536,849	405,792.58
COMBINED EA & AA TOT		16,134,819	680,392.80

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: NOVEMBER 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	09-28-94 TO 10-28-94	4,304	1,079.35
140 HAWTHORNE DRIVE	10-14-94 TO 11-30-94	4,760	0.00 (credit)
1570 STARK ROAD	10-28-94 TO 11-30-94	17,054	6,476.29
EA SUB TOTALS		26,118	7,555.64

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	09-26-94 TO 11-28-94	6,940	4,451.79
2600 ABERDEEN BLVD	10-26-94 TO 11-28-94	375	162.20
AA SUB TOTALS		7,315	4,613.99
COMBINED EA & AA TOT		33,433	12,169.63

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: DECEMBER 1994

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	11-28-94 TO 12-27-94	230	27.19
6860 BELARDI ROAD	08-29-94 TO 11-18-94	13,883	0.00
CARROLL ISLAND	11-11-94 TO 12-13-94	1,600	116.38
1900 NUTTAL AVE	11-30-94 TO 12-29-94	63,420	3,779.52
GRACES QUARTERS	12-06-94 TO 01-06-95	7,700	516.24
EDGEWOOD CONTRACT	12-03-94 TO 01-03-95	6,378,280	258,539.19
EDGEWOOD COMMISSARY	12-03-94 TO 01-03-95	0	0.00
EA SUB TOTALS		6,465,113	262,978.52

credit

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	11-14-94 TO 12-14-94	150	22.05
TOWER #6	11-14-94 TO 12-14-94	1,649	176.76
TOWER #7	11-15-94 TO 12-15-94	0	6.60
TOWER #8	11-15-94 TO 12-15-94	1,168	127.35
TOWER #9	11-15-94 TO 12-15-94	0	6.60
TOWER #12	11-16-94 TO 12-15-94	0	6.50
DEER CREEK	10-20-94 TO 11-18-94	93,200	7,316.72
301 OLDBAY LANE	11-29-94 TO 12-28-94	292	31.42
401 RICHARDS LANE	11-28-94 TO 12-27-94	19	12.80
PRIESTFORD ROAD	11-18-94 TO 12-20-94	14,520	1,537.15
300 N. PARADISE ROAD	11-29-94 TO 12-28-94	26,500	1,848.79
526 MICHAELSVILLE RD	11-17-94 TO 12-19-94	430	40.83
ABERDEEN CONTRACT	12-02-94 TO 01-03-95	10,801,000	492,221.03
TENNESSEE AVENUE	11-18-94 TO 12-19-94	12	7.74
ROUTE 297	11-22-94 TO 12-21-94	12	7.74
WATER & CONESTOGA RDS	11-08-94 TO 12-09-94	20	12.55
BAYVIEW BLVD	11-08-94 TO 12-09-94	20	12.55
GROVE POINT 55	11-09-94 TO 12-09-94	0	9.00
CRYSTAL BEACH 54	11-28-94 TO 12-28-94	0	9.14
ABERDEEN COMMISSARY	12-02-94 TO 01-03-95	(209,082)	(9,528.28)
AA SUB TOTALS		10,729,910	493,885.04
COMBINED EA & AA TOT		17,195,023	756,863.56

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: DECEMBER 1994

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	08-29-94 TO 10-18-94	6,564	0.00
140 HAWTHORNE DRIVE	11-30-94 TO 12-29-94	2,836	806.16
1570 STARK ROAD	11-30-94 TO 12-29-94	16,554	7,327.90
EA SUB TOTALS		25,954	8,134.06

(credit)

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	11-28-94 TO 12-27-94	8,622	3,910.42
2600 ABERDEEN BLVD	11-28-94 TO 12-27-94	853	400.39
AA SUB TOTALS		9,475	4,310.81
COMBINED EA & AA TOT		35,429	12,444.87

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: JANUARY 1995

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	12-27-94 TO 01-25-95	0	11.50
6860 BELARDI ROAD	11-18-94 TO 12-29-94	20,800	565.15
CARROLL ISLAND	12-13-94 TO 01-12-95	1,500	109.83
1900 NUTTAL AVE	12-29-94 TO 01-27-95	68,180	4,100.62
GRACES QUARTERS	01-06-95 TO 02-03-95	7,900	529.35
EDGEWOOD CONTRACT	01-03-95 TO 01-31-95	6,260,720	263,634.70
EDGEWOOD COMMISSARY	01-03-95 TO 01-31-95	0	0.00
EA SUB TOTALS		6,359,100	268,951.15

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	12-14-94 TO 01-16-95	353	42.68
TOWER #6	12-14-94 TO 01-16-95	2,330	245.32
TOWER #7	12-15-94 TO 01-17-95	0	6.50
TOWER #8	12-15-94 TO 01-17-95	1,235	133.09
TOWER #9	12-15-94 TO 01-17-95	0	6.50
TOWER #12	12-15-94 TO 01-18-95	0	6.50
DEER CREEK	11-18-94 TO 12-20-94	95,005	6,437.79
301 OLDBAY LANE	12-28-94 TO 01-26-95	213	26.03
401 RICHARDS LANE	12-27-94 TO 01-25-95	935	75.28
PRIESTFORD ROAD	12-20-94 TO 01-23-95	12,850	1,278.11
300 N. PARADISE ROAD	12-28-94 TO 01-26-95	26,600	1,825.62
526 MICHAELSVILLE RD	12-19-94 TO 01-18-95	578	50.92
ABERDEEN CONTRACT	01-03-95 TO 01-31-95	10,637,000	512,077.24
TENNESSEE AVENUE	12-19-94 TO 01-20-95	12	7.74
ROUTE 297	12-21-94 TO 01-23-95	12	7.74
WATER & CONESTOGA RDS	12-09-94 TO 01-11-95	20	12.54
BAYVIEW BLVD	12-09-94 TO 01-11-95	20	12.54
GROVE POINT 55	12-09-94 TO 01-11-95	0	9.14
CRYSTAL BEACH 54	12-28-94 TO 01-27-95	0	9.00
ABERDEEN COMMISSARY	01-03-95 TO 01-31-95	(191,784)	(9,232.67)
AA SUB TOTALS		10,585,379	513,037.61
COMBINED EA & AA TOT		16,944,479	781,988.76

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: JANUARY 1995

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	11-18-94 TO 10-18-94	2,703	762.00
140 HAWTHORNE DRIVE	12-29-94 TO 01-27-95	2,131	985.24
1570 STARK ROAD	12-29-94 TO 01-27-95	19,958	8,735.14
EA SUB TOTALS		24,792	10,482.38

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	12-27-94 TO 01-25-95	11,650	5,189.56
2600 ABERDEEN BLVD	12-27-94 TO 01-25-95	1,117	523.57
AA SUB TOTALS		12,767	5,713.13
COMBINED EA & AA TOT		37,559	16,195.51

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: FEBRUARY 1995

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	01-25-95 TO 02-24-95	3	11.71
6860 BELARDI ROAD	12-29-94 TO 01-27-95	19,000	1,162.75
CARROLL ISLAND	01-12-95 TO 02-10-95	1,500	109.83
1900 NUTTAL AVE	01-27-95 TO 02-28-95	78,540	4,482.59
GRACES QUARTERS	02-03-95 TO 03-07-95	9,100	608.01
EDGEWOOD CONTRACT	01-31-95 TO 03-02-95	6,939,440	284,606.91
EDGEWOOD COMMISSARY	01-31-95 TO 03-02-95	0	0.00
EA SUB TOTALS		7,047,583	290,981.80

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	01-16-95 TO 02-14-95	1,307	138.87
TOWER #6	01-16-95 TO 02-14-95	2,815	291.59
TOWER #7	01-17-95 TO 02-15-95	0	6.50
TOWER #8	01-17-95 TO 02-15-95	1,202	128.23
TOWER #9	01-17-95 TO 02-15-95	0	6.50
TOWER #12	01-18-95 TO 02-16-95	0	6.50
DEER CREEK	12-20-94 TO 01-25-95	117,100	7,048.94
301 OLDBAY LANE	01-26-95 TO 02-27-95	245	28.21
401 RICHARDS LANE	01-25-95 TO 02-24-95	1,284	99.08
PRIESTFORD ROAD	01-23-95 TO 02-21-95	12,800	1,413.85
300 N. PARADISE ROAD	01-26-95 TO 02-27-95	30,500	2,091.61
526 MICHAELSVILLE RD	01-18-95 TO 02-16-95	687	58.36
ABERDEEN CONTRACT	01-31-95 TO 03-02-95	12,274,000	583,824.42
TENNESSEE AVENUE	01-20-95 TO 02-21-95	12	7.73
ROUTE 297	01-23-95 TO 02-23-95	12	7.73
WATER & CONESTOGA RDS	01-11-95 TO 02-09-95	20	13.18
BAYVIEW BLVD	01-11-95 TO 02-09-95	20	12.98
GROVE POINT 55	01-11-95 TO 02-09-95	0	9.00
CRYSTAL BEACH 54	01-27-95 TO 02-27-95	0	9.00
ABERDEEN COMMISSARY	01-31-95 TO 03-02-95	(209,842)	(9,981.35)
AA SUB TOTALS		12,232,162	585,220.93
COMBINED EA & AA TOT		19,279,745	876,202.73

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: FEBRUARY 1995

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	12-29-94 TO 01-27-95	2,354	1,086.78
140 HAWTHORNE DRIVE	01-27-95 TO 02-28-95	3,133	1,447.09
1570 STARK ROAD	01-27-95 TO 02-28-95	26,124	11,223.38
EA SUB TOTALS		31,611	13,757.25

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	01-25-95 TO 02-24-95	17,846	7,555.71
2600 ABERDEEN BLVD	01-25-95 TO 02-24-95	1,051	495.41
AA SUB TOTALS		18,897	8,051.12
COMBINED EA & AA TOT		50,508	21,808.37

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: MARCH 1995

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	02-24-95 TO 03-27-95	5	11.85
6860 BELARDI ROAD	01-27-95 TO 02-28-95	25,400	1,373.50
CARROLL ISLAND	02-10-95 TO 03-14-95	800	63.94
1900 NUTTAL AVE	02-28-95 TO 03-29-95	59,640	3,742.74
GRACES QUARTERS	03-07-95 TO 04-05-95	6,100	411.36
EDGEWOOD CONTRACT	03-02-95 TO 03-31-95	6,396,000	266,629.07
EDGEWOOD COMMISSARY	03-02-95 TO 03-31-95	0	0.00
EA SUB TOTALS		6,487,945	272,232.46

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	02-14-95 TO 03-16-95	1,315	139.67
TOWER #6	02-14-95 TO 03-16-95	1,821	190.92
TOWER #7	02-15-95 TO 03-17-95	732	80.63
TOWER #8	02-15-95 TO 03-17-95	1,527	240.19
TOWER #9	02-17-95 TO 03-17-95	1	6.61
TOWER #12	02-16-95 TO 03-20-95	0	6.50
DEER CREEK	01-23-95 TO 02-21-95	87,100	6,523.78
301 OLDBAY LANE	02-27-95 TO 03-28-95	210	25.83
401 RICHARDS LANE	02-24-95 TO 03-27-95	1,141	89.33
PRIESTFORD ROAD	02-21-95 TO 03-21-95	15,180	1,763.51
300 N. PARADISE ROAD	02-27-95 TO 03-28-95	25,400	1,743.78
526 MICHAELSVILLE RD	02-16-95 TO 03-20-95	212	25.97
ABERDEEN CONTRACT	03-02-95 TO 03-31-95	10,331,000	503,667.10
TENNESSEE AVENUE	02-21-95 TO 03-22-95	12	7.73
ROUTE 297	02-23-95 TO 03-24-95	12	7.73
WATER & CONESTOGA RDS	02-09-95 TO 03-10-95	20	13.75
BAYVIEW BLVD	02-09-95 TO 03-10-95	20	13.75
GROVE POINT 55	02-09-95 TO 03-09-95	0	9.00
CRYSTAL BEACH 54	02-27-95 TO 03-27-95	0	9.00
ABERDEEN COMMISSARY	03-02-95 TO 03-31-95	(216,443)	(10,552.25)
AA SUB TOTALS		10,249,260	504,012.53
COMBINED EA & AA TOT		16,737,205	776,244.99

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: MARCH 1995

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	01-27-95 TO 02-28-95	3,847	1,773.46
140 HAWTHORNE DRIVE	02-28-95 TO 03-29-95	2,630	1,221.64
1570 STARK ROAD	02-28-95 TO 03-29-95	15,939	7,204.07
EA SUB TOTALS		22,416	10,199.17

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	02-24-95 TO 03-27-95	11,964	5,349.71
2600 ABERDEEN BLVD	02-24-95 TO 03-27-95	1,029	487.11
AA SUB TOTALS		12,993	5,836.82
COMBINED EA & AA TOT		35,409	16,035.99

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: APRIL 1995

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	03-27-95 TO 04-25-95	7	11.99
6860 BELARDI ROAD	02-28-95 TO 03-29-95	13,800	1,031.93
CARROLL ISLAND	03-14-95 TO 04-12-95	0	11.50
1900 NUTTAL AVE	03-29-95 TO 04-27-95	60,060	3,914.78
GRACES QUARTERS	04-05-95 TO 05-04-95	5,700	385.14
EDGEWOOD CONTRACT	03-31-95 TO 05-01-95	6,638,960	272,484.27
EDGEWOOD COMMISSARY	03-02-95 TO 03-31-95	0	0.00
EA SUB TOTALS		6,718,527	277,839.61

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	03-16-95 TO 04-18-95	1,047	112.86
TOWER #6	03-16-95 TO 04-18-95	842	94.28
TOWER #7	03-17-95 TO 04-19-95	0	6.70
TOWER #8	03-17-95 TO 04-19-95	1,073	117.45
TOWER #9	03-17-95 TO 04-19-95	0	6.70
TOWER #12	03-20-95 TO 04-20-95	0	6.50
DEER CREEK	02-21-95 TO 03-31-95	80,600	6,400.38
301 OLDBAY LANE	03-28-95 TO 04-26-95	263	29.44
401 RICHARDS LANE	03-27-95 TO 04-25-95	1,232	95.53
PRIESTFORD ROAD	03-21-95 TO 04-20-95	11,410	1,292.40
300 N. PARADISE ROAD	03-28-95 TO 04-26-95	20,200	1,389.14
526 MICHAELSVILLE RD	03-20-95 TO 04-18-95	139	20.99
ABERDEEN CONTRACT	03-31-95 TO 05-01-95	9,912,000	466,581.49
TENNESSEE AVENUE	03-22-95 TO 04-21-95	12	7.73
ROUTE 297	03-24-95 TO 04-10-95	12	7.85
WATER & CONESTOGA RDS	03-10-95 TO 04-10-95	20	26.93
BAYVIEW BLVD	03-10-95 TO 04-10-95	20	26.73
GROVE POINT 55	03-09-95 TO 04-11-95	0	9.00
CRYSTAL BEACH 54	03-27-95 TO 04-27-95	0	9.00
ABERDEEN COMMISSARY	03-31-95 TO 05-01-95	(215,564)	(10,147.03)
AA SUB TOTALS		9,813,306	466,094.07
COMBINED EA & AA TOT		16,531,833	743,933.68

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: APRIL 1995

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	01-27-95 TO 03-29-95	3,821	6.21
140 HAWTHORNE DRIVE	03-29-95 TO 04-27-95	2,233	1,011.59
1570 STARK ROAD	03-29-95 TO 04-27-95	11,228	5,176.02
EA SUB TOTALS		17,282	6,193.82

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	03-27-95 TO 04-25-95	7,439	3,335.03
2600 ABERDEEN BLVD	03-27-95 TO 04-25-95	418	201.55
AA SUB TOTALS		7,857	3,536.58
COMBINED EA & AA TOT		25,139	9,730.40

SUBJECT: DISTRIBUTION OF ELECTRIC CHARGES DATE: MAY 1995

1. EDGEWOOD AREA	DATE	KWH	COST
1601 HANSON ROAD	03-27-95 TO 05-24-95	5	11.36
6860 BELARDI ROAD	03-29-95 TO 04-27-95	13,200	1,000.98
CARROLL ISLAND	04-12-95 TO 05-11-95	2,400	168.82
1900 NUTTAL AVE	04-27-95 TO 05-26-95	72,380	4,821.80
GRACES QUARTERS	05-04-95 TO 06-06-95	7,300	671.35
EDGEWOOD CONTRACT	05-01-95 TO 06-01-95	7,582,800	318,884.91
EDGEWOOD COMMISSARY	03-02-95 TO 03-31-95	0	0.00
EA SUB TOTALS		7,678,085	325,559.22

2. ABERDEEN AREA	DATE	KWH	COST
TOWER #5	04-18-95 TO 05-16-95	294	36.60
TOWER #6	04-18-95 TO 05-16-95	293	38.71
TOWER #7	04-19-95 TO 05-17-95	0	7.71
TOWER #8	04-19-95 TO 05-17-95	579	67.45
TOWER #9	04-19-95 TO 05-17-95	0	6.50
TOWER #12	04-20-95 TO 05-18-95	0	6.50
DEER CREEK	03-11-95 TO 04-20-95	79,500	6,369.12
301 OLDBAY LANE	04-26-95 TO 05-25-95	309	32.58
401 RICHARDS LANE	04-25-95 TO 05-24-95	261	29.30
PRIESTFORD ROAD	04-20-95 TO 05-19-95	9,890	3,012.95
300 N. PARADISE ROAD	04-26-95 TO 05-25-95	18,700	1,286.85
526 MICHAELSVILLE RD	04-18-95 TO 05-17-95	139	20.99
ABERDEEN CONTRACT	05-01-95 TO 06-01-95	9,685,000	467,797.96
TENNESSEE AVENUE	04-25-95 TO 05-24-95	12	7.73
ROUTE 297	04-25-95 TO 05-24-95	12	7.73
WATER & CONESTOGA RDS	04-10-95 TO 05-10-95	20	13.95
BAYVIEW BLVD	04-10-95 TO 05-10-95	20	13.17
GROVE POINT 55	04-11-95 TO 05-09-95	0	9.00
CRYSTAL BEACH 54	04-27-95 TO 05-26-95	0	9.00
ABERDEEN COMMISSARY	05-01-95 TO 06-01-95	(244,579)	(11,813.41)
AA SUB TOTALS		9,550,450	466,960.39
COMBINED EA & AA TOT		17,228,535	792,519.61

SUBJECT: DISTRIBUTION OF GAS CHARGES DATE: MAY 1995

1. EDGEWOOD AREA	DATE	THERMS	COST
15 JACOB STREET	03-29-95 TO 04-27-95	1,797	817.00
140 HAWTHORNE DRIVE	04-27-95 TO 05-26-95	2,240	1,013.59
1570 STARK ROAD	04-27-95 TO 05-26-95	6,982	3,283.96
EA SUB TOTALS		11,019	5,114.55

2. ABERDEEN AREA	DATE	THERMS	COST
1 CHESAPEAKE ROAD	04-25-95 TO 05-24-95	4,433	1,991.23
2600 ABERDEEN BLVD	04-25-95 TO 05-24-95	320	157.66
AA SUB TOTALS		4,753	2,148.89
COMBINED EA & AA TOT		15,772	7,263.44

ATTACHMENT 8.9
LCCID DATA

Study:

Energy Conservation Investment Program (ECIP)

LCCID FY96

Installation & Location: Aberdeen Proving Grounds

Region data: MARYLAND Census Region: 3

Project NO. & Title: 4130.06 New 115 kV Substation - 2 Transformers

Fiscal Year: 1995 Discrete Portion: ECO-1

Analysis Date: 04/12/96 Economic Life: 20 years

Prepared by: SAB

ECIP Summary Report

Investment

A. Construction Cost	3560000
B. SIOH	270000
C. Design Cost	270000
D. Total Cost (1A+1B+1C)	\$4,100,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$4,100,000

. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
=====	=====	=====	=====	=====	=====	=====	=====
Electricity	\$8.8	/Mbtus	-4,429	Mbtus	-\$38,926	13.84	-\$538,743
Elec. Deman					\$640,000	13.47	\$8,620,800
TOTAL			-4,429	Mbtus	\$601,074		\$8,082,058

5. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
New	-\$15,000	Annual	13.47	-\$202,050
ANNUAL TOTAL	-\$15,000			-\$202,050
ONE TIME TOTAL	\$0			\$0
TOTAL	-\$15,000			-\$202,050

4. First Year Dollar Savings	\$586,074
5. Simple Payback Period (Years)	7.0
6. Total Net Discounted Savings	\$7,880,008
7. Savings to Investment Ratio	1.92
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	7.56%

Life Cycle Cost Analysis Study:
 Energy Conservation Investment Program (ECIP) LCCID FY96
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 New 115 kV Substation - 1 Transformers
 Fiscal Year: 1995 Discrete Portion: ECO-1A
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

ECIP Summary Report

Investment

A. Construction Cost	2300000
B. SIOH	200000
C. Design Cost	200000
D. Total Cost (1A+1B+1C)	\$2,700,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$2,700,000

Energy Savings (+) / Costs (-)
 Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$8.8	/Mbtus	-4,429	Mbtus	-\$38,926	13.84	-\$538,743
Elec. Deman					\$640,000	13.47	\$8,620,800
TOTAL			-4,429	Mbtus	\$601,074		\$8,082,058

Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
New	-\$15,000	Annual	13.47	-\$202,050
ANNUAL TOTAL	-\$15,000			-\$202,050
ONE TIME TOTAL	\$0			\$0
TOTAL	-\$15,000			-\$202,050

1. First Year Dollar Savings	\$586,074
5. Simple Payback Period (Years)	4.61
6. Total Net Discounted Savings	\$7,880,008
7. Savings to Investment Ratio	2.92
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	9.83%

Life Cycle Cost Analysis Study: LCCID FY96
 Energy Conservation Investment Program (ECIP)
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 Upgrading Substations 4 & 9
 Fiscal Year: 1995 Discrete Portion: ECO-2
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

ECIP Summary Report

Investment
 A. Construction Cost 450000
 B. SIOH 35000
 C. Design Cost 35000
 D. Total Cost (1A+1B+1C) \$520,000
 E. Salvage Value of Existing Equip. \$0
 F. Public Utility Company Rebate \$0
 G. Total Investment (1D-1E-1F) \$520,000

Energy Savings (+) / Costs (-)
 Rate of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$.	/Mbtus	0	Mbtus	\$0	13.84	\$0
Elec. Deman					\$140,000	13.47	\$1,885,800
TOTAL			0	Mbtus	\$140,000		\$1,885,800

Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

First Year Dollar Savings \$140,000
 Simple Payback Period (Years) 3.71
 Total Net Discounted Savings \$1,885,800
 Savings to Investment Ratio 3.63
 If < 1, Project does not qualify
 Adjusted Internal Rate of Return 11.03%

Life Cycle Cost Analysis

Study:

LCCID FY96

Energy Conservation Investment Program (ECIP)

Installation & Location: Aberdeen Proving Grounds

Region data: MARYLAND Census Region: 3

Project NO. & Title: 4130.06 Upgrading Substations 18

Fiscal Year: 1995 Discrete Portion: ECO-3

Analysis Date: 04/12/96 Economic Life: 20 years

Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	1300000
B. SIOH	100000
C. Design Cost	100000
D. Total Cost (1A+1B+1C)	\$1,500,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$1,500,000

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$.	/Mbtus	0	Mbtus	\$0	13.84	\$0
Elec. Deman					\$350,000	13.47	\$4,714,500
TOTAL			0	Mbtus	\$350,000		\$4,714,500

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$350,000
5. Simple Payback Period (Years)	4.29
6. Total Net Discounted Savings	\$4,714,500
7. Savings to Investment Ratio	3.14
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	10.23%

Life Cycle Cost Analysis Study:
 Energy Conservation Investment Program (ECIP) LCCID FY96
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 Emergency Generation Rider
 Fiscal Year: 1995 Discrete Portion: ECO-4
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	0
B. SIOH	0
C. Design Cost	0
D. Total Cost (1A+1B+1C)	\$0
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$0

***** No investment costs. Other items should be checked. *****

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$11.7	/Mbtus	143	Mbtus	\$1,676	13.84	\$23,193
Elec. Deman					\$16,700	13.47	\$224,949
Residual Oi	\$5.1	/Mbtus	-178	Mbtus	-\$899	17.62	-\$15,839
Natural Gas	\$5.1	/Mbtus	-300	Mbtus	-\$1,530	17.89	-\$27,372
TOTAL			-335	Mbtus	\$15,947		\$204,932

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
New	-\$4,300	Annual	13.47	-\$57,921
ANNUAL TOTAL	-\$4,300			-\$57,921
ONE TIME TOTAL	\$0			\$0
TOTAL	-\$4,300			-\$57,921

4. First Year Dollar Savings	\$11,647
5. Simple Payback Period (Years)	0
6. Total Net Discounted Savings	\$147,011
7. Savings to Investment Ratio	NA
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	-100.0%

Life Cycle Cost Analysis Study: LCCID FY96
 Energy Conservation Investment Program (ECIP)
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 Curtailment Service Rider
 Fiscal Year: 1995 Discrete Portion: ECO-5
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	4300000
B. SIOH	300000
C. Design Cost	300000
D. Total Cost (1A+1B+1C)	\$4,900,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$4,900,000

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$14.9	/Mbtus	2,048	Mbtus	\$30,597	13.84	\$423,464
Elec. Deman					\$1,800,000	13.47	\$24,246,000
Residual Oi	\$5.1	/Mbtus	-6,824	Mbtus	-\$34,461	17.62	-\$607,206
TOTAL			-4,776	Mbtus	\$1,796,136		\$24,062,260

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$1,796,136
5. Simple Payback Period (Years)	2.73
6. Total Net Discounted Savings	\$24,062,260
7. Savings to Investment Ratio	4.91
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	12.72%

Life Cycle Cost Analysis Study:
 Energy Conservation Investment Program (ECIP) LCCID FY96
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 Peak Shaving with Emergency Generators
 Fiscal Year: 1995 Discrete Portion: ECO-6
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	1100
B. SIOH	0
C. Design Cost	66
D. Total Cost (1A+1B+1C)	\$1,166
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$1,166

2. Energy Savings (+) / Costs (-)
 Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$14.9	/Mbtus	1,051	Mbtus	\$15,702	13.84	\$217,315
Elec. Deman					\$17,000	13.47	\$228,990
Residual Oi	\$5.1	/Mbtus	-1,302	Mbtus	-\$6,575	17.62	-\$115,853
Natural Gas	\$5.1	/Mbtus	-2,202	Mbtus	-\$11,230	17.89	-\$200,908
TOTAL			-2,453	Mbtus	\$14,897		\$129,543

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$14,897
5. Simple Payback Period (Years)	.08
6. Total Net Discounted Savings	\$129,543
7. Savings to Investment Ratio	111.1
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	31.75%

Life Cycle Cost Analysis

Study:

LCCID FY96

Energy Conservation Investment Program (ECIP)

Installation & Location: Aberdeen Proving Grounds

Region data: MARYLAND Census Region: 3

Project NO. & Title: 4130.06 Electric Clothes Dryers to Natural Gas

Fiscal Year: 1995 Discrete Portion: ECO-7

Analysis Date: 04/12/96 Economic Life: 20 years

Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	68000
B. SIOH	6000
C. Design Cost	5000
D. Total Cost (1A+1B+1C)	\$79,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$79,000

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$9.8	/Mbtus	1,258	Mbtus	\$12,291	13.84	\$170,103
Elec. Deman					\$7,000	13.47	\$94,290
Natural Gas	\$5.1	/Mbtus	-1,799	Mbtus	-\$9,175	17.89	-\$164,139
TOTAL			-541	Mbtus	\$10,116		\$100,254

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings

\$10,116

5. Simple Payback Period (Years)

7.81

6. Total Net Discounted Savings

\$100,254

7. Savings to Investment Ratio

1.27

If < 1, Project does not qualify

8. Adjusted Internal Rate of Return

5.35%

Life Cycle Cost Analysis
 Energy Conservation Investment Program (ECIP)
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 Disable Door Sensor
 Fiscal Year: 1995 Discrete Portion: ECO-8
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

Study:

LCCID FY96

ECIP Summary Report

1. Investment

A. Construction Cost	240
B. SIOH	0
C. Design Cost	0
D. Total Cost (1A+1B+1C)	\$240
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$240

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$9.8	/Mbtus	2	Mbtus	\$20	13.84	\$270
Elec. Deman					\$10	13.47	\$135
TOTAL			2	Mbtus	\$30		\$405

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$30
5. Simple Payback Period (Years)	8.12
6. Total Net Discounted Savings	\$405
7. Savings to Investment Ratio	1.69
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	6.86%

Study:

LCCID FY96

Energy Conservation Investment Program (ECIP)

Installation & Location: Aberdeen Proving Grounds

Region data: MARYLAND Census Region: 3

project NO. & Title: 4130.06 Limit Floor Warming System

Fiscal Year: 1995 Discrete Portion: ECO-9

Analysis Date: 04/12/96 Economic Life: 20 years

repared by: SAB

ECIP Summary Report

Investment

A. Construction Cost	0
B. SIOH	0
C. Design Cost	0
D. Total Cost (1A+1B+1C)	\$0
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$0

***** No investment costs. Other items should be checked. *****

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$7.8	/Mbtus	129	Mbtus	\$1,000	13.84	\$13,837
Elec. Deman					\$800	13.47	\$10,776
TOTAL			129	Mbtus	\$1,800		\$24,613

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$1,800
5. Simple Payback Period (Years)	0
6. Total Net Discounted Savings	\$24,613
7. Savings to Investment Ratio	NA
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	-100.0%

Life Cycle Cost Analysis

Study:

LCCID FY96

Energy Conservation Investment Program (ECIP)

Installation & Location: Aberdeen Proving Grounds

Region data: MARYLAND Census Region: 3

Project NO. & Title: 4130.06 Electric Dryers to Gas - New Dryers

Fiscal Year: 1995 Discrete Portion: ECO-11

Analysis Date: 04/12/96 Economic Life: 20 years

Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	154000
B. SIOH	12000
C. Design Cost	11000
D. Total Cost (1A+1B+1C)	\$177,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$177,000

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$9.8	/Mbtus	1,258	Mbtus	\$12,291	13.84	\$170,103
Elec. Deman					\$7,000	13.47	\$94,290
Natural Gas	\$5.1	/Mbtus	-1,799	Mbtus	-\$9,175	17.89	-\$164,139
TOTAL			-541	Mbtus	\$10,116		\$100,254

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$10,116
5. Simple Payback Period (Years)	17.5
6. Total Net Discounted Savings	\$100,254
7. Savings to Investment Ratio	.57
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	1.18%

Life Cycle Cost Analysis

Study:

LCCID FY96

Energy Conservation Investment Program (ECIP)
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 Insulation
 Fiscal Year: 1995 Discrete Portion: ECO-12
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	9100
B. SIOH	700
C. Design Cost	700
D. Total Cost (1A+1B+1C)	\$10,500
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$10,500

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$6.7	/Mbtus	6	Mbtus	\$40	13.84	\$554
Elec. Deman					\$60	13.47	\$808
TOTAL			6	Mbtus	\$100		\$1,362

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$100
5. Simple Payback Period (Years)	104.98
6. Total Net Discounted Savings	\$1,362
7. Savings to Investment Ratio	.13
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	-6.01%

Life Cycle Cost Analysis

Study:

LCCID FY96

Energy Conservation Investment Program (ECIP)

Installation & Location: Aberdeen Proving Grounds

Region data: MARYLAND Census Region: 3

Project NO. & Title: 4130.06 Ice Storage for Building 314

Fiscal Year: 1995 Discrete Portion: ECO-13

Analysis Date: 04/12/96 Economic Life: 20 years

Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	296000
B. SIOH	22000
C. Design Cost	22000
D. Total Cost (1A+1B+1C)	\$340,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$340,000

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$16.4	/Mbtus	-104	Mbtus	-\$1,700	13.84	-\$23,534
Elec. Deman					\$31,700	13.47	\$426,999
TOTAL			-104	Mbtus	\$30,000		\$403,466

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$30,000
5. Simple Payback Period (Years)	11.33
6. Total Net Discounted Savings	\$403,465
7. Savings to Investment Ratio	1.19
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	4.99%

Life Cycle Cost Analysis Study: LCCID FY96
 Energy Conservation Investment Program (ECIP)
 Installation & Location: Aberdeen Proving Grounds
 Region data: MARYLAND Census Region: 3
 Project NO. & Title: 4130.06 Ice Storage for Building 5046
 Fiscal Year: 1995 Discrete Portion: ECO-14
 Analysis Date: 04/12/96 Economic Life: 20 years
 Prepared by: SAB

ECIP Summary Report

1. Investment

A. Construction Cost	298000
B. SIOH	23000
C. Design Cost	22000
D. Total Cost (1A+1B+1C)	\$343,000
E. Salvage Value of Existing Equip.	\$0
F. Public Utility Company Rebate	\$0
G. Total Investment (1D-1E-1F)	\$343,000

2. Energy Savings (+) / Costs (-)

Date of NISTIR 85-3273-X used for Discount Factors Oct 1995

Fuel	Price	Price Units	Usage Savings	Usage Units	Annual Savings	Discount Factor	Discounted Savings
Electricity	\$15.8	/Mbtus	-57	Mbtus	-\$900	13.84	-\$12,456
Elec. Deman					\$13,900	13.47	\$187,233
TOTAL			-57	Mbtus	\$13,000		\$174,777

3. Non Energy Savings (+) / Costs (-)

Item	Savings/ Cost	Year	Discount Factor	Discounted Savings/Cost
ANNUAL TOTAL	\$0			\$0
ONE TIME TOTAL	\$0			\$0
TOTAL	\$0			\$0

4. First Year Dollar Savings	\$13,000
5. Simple Payback Period (Years)	26.38
6. Total Net Discounted Savings	\$174,777
7. Savings to Investment Ratio	.51
If < 1, Project does not qualify	
8. Adjusted Internal Rate of Return	.65%

ATTACHMENT 8.10
LCCID - ENERGY ESCALATION VALUES
OCTOBER 94 (FY 95)

Life Cycle Cost Analysis Study: TEMP1
 LCCID FY95 (92) Date/Time: 02-21-96 15:08:22
 Project no., FY, & Title: FY
 Installation & Location: MARYLAND
 Design Feature:
 Alt. Id. A; Title: ECO
 Name of Designer:

Fuel & Non Fuel Escalation Values

Location - MARYLAND Census Region: 3
 Rates for INDUSTRIAL Sector.

Energy Escalation Values (OCT 1994):

Energy Type	1994	1995	1996	1997	1998	1999	2000	2001	2002
ELECT	.99	-.13	-.33	-.79	.27	.86	1.05	-.06	-.07
DIST	.61	1.21	1.80	3.34	2.28	3.35	3.42	2.78	2.71
RESID	7.21	3.06	2.97	4.03	3.60	3.74	5.15	3.92	3.77
NAT G	4.07	2.20	2.15	2.34	1.37	1.35	2.23	3.27	1.05
COAL	3.83	6.84	-2.46	1.01	-1.50	.00	3.05	1.48	2.91
LPG	.43	1.19	1.01	2.74	1.13	2.16	2.35	1.76	2.33

Energy Type	2003	2004	2005	2006	2007	2008	2009	2010	2011
ELECT	.20	-.45	-.52	-.13	.79	.39	1.36	.45	.38
DIST	2.97	1.92	1.41	2.32	1.97	2.08	1.45	1.72	1.69
RESID	4.09	2.84	1.27	2.93	2.85	.99	1.57	2.70	2.63
NAT G	2.09	4.29	.20	3.52	4.54	1.45	1.96	2.10	2.05
COAL	1.42	.47	.46	.46	.00	1.83	-.90	.91	.90
LPG	1.84	1.23	1.57	1.47	1.24	1.16	1.35	1.40	1.45

Energy Type	2012	2013	2014	2015	2016	2017	2018	2019	2020
ELECT	.44	.38	.44	.44	.37	.44	.43	.43	.37
DIST	1.66	1.77	1.61	1.71	1.68	1.78	1.63	1.72	1.69
RESID	2.75	2.85	2.60	2.70	2.80	2.72	2.65	2.73	2.66
NAT G	2.01	1.97	2.10	2.05	2.01	1.97	2.08	2.04	2.14
COAL	1.34	.88	.87	1.30	.85	1.27	.84	.83	1.23
LPG	1.42	1.47	1.38	1.43	1.47	1.39	1.43	1.47	1.39

Energy Type	2021
ELECT	.43
DIST	1.67
RESID	2.73
NAT G	1.96
COAL	.81
LPG	1.43

Routine M&R/Custodial Costs

Major Repair & Replacement Costs

Other Operational Costs/Benefits

Study: TEMP1

LCCID FY95 (92)

Date/Time: 02-21-96 15:08:22

Project no., FY, & Title:

FY

Installation & Location:

MARYLAND

Design Feature:

Alt. Id. A; Title: ECO

Name of Designer:

Basic Input Data Summary

Criteria Reference: Tri-Service MOA for Econ Anal/LCC (Energy)

Discount Rate: 3.0%

Key Project-Calendar Information

Date of Study (DOS)

JAN 96

Midpoint of Construction (MPC)

JAN 96

Beneficial Occupancy Date (BOD)

JAN 96

Analysis End Date (AED)

JAN 21

Cost / Benefit Description	Cost in DOS \$ (K Dollars)	Equivalent Uniform Differential Escalation Rate (% Per Year)	Time(s) Cost Incurred
INVESTMENT COSTS	1000.0	.00	JAN 96
ELECTRICITY	.0	.16	JUL96-JUL20
ELECT DEMAND	.0	.00	JUL96-JUL20
DISTILLATE OIL	.0	2.24	JUL96-JUL20
RESIDUAL OIL	.0	3.11	JUL96-JUL20
NATURAL GAS	.0	2.11	JUL96-JUL20
COAL	.0	.89	JUL96-JUL20
LIQ PETROL GAS	.0	1.58	JUL96-JUL20

Other Key Input Data

Location - MARYLAND

Census Region: 3

Rates for INDUSTRIAL Sector. Tables from OCT 94

Energy Type	Unit Cost	Consumption	Projected Dates
ELECT	\$ 25.00/MBTUs	12.0 K BTUs	JAN96-JAN21
Elect Dmd	N/A	.0 K Dollars	JAN96-JAN21
DIST	\$ 5.00/MBTUs	34.0 K BTUs	JAN96-JAN21
RESID	\$ 5.00/MBTUs	12.0 K BTUs	JAN96-JAN21
NAT G	\$ 5.00/MBTUs	1.0 K BTUs	JAN96-JAN21
COAL	\$ 5.00/MBTUs	4.0 K BTUs	JAN96-JAN21
LPG	\$ 3.00/MBTUs	7.0 K BTUs	JAN96-JAN21

10 1994 3.0 FEMP Discount Rate
 40 ESCALATION PERIODS, YEARS PER ESCALATION PERIOD:
 39*1 99
 (A8,F10.2,7F8.4,/,8X,9F8.4,/,8X,9F8.4,/,8X,9F8.4,/,8X,6F8.4)
 (1X,/,1X,/,1X,/,1X,/,1X)

INDUSTRIAL

6 ENERGY TYPES
 5 DOE REGIONS

DOE REGION	1.	19.25	-.7273	-1.2559	-.2120	.2124	.6359	.0000	.8425
ELECT		.2089	.5211	-.5702	.5214	-.3631	.8329	1.7553	-.2537
		.4044	.4532	.4010	.3994	.4475	.3960	.4438	.3927
		.3895	.4365	.4346	.3846	.4310	.4232	.4274	.3783
		.4221	.4204	.4204	.4204	.4204	.4204	.4204	.4239
DIST		4.95	.6061	1.2048	1.7857	3.3138	2.0755	2.9575	3.7702
		2.7682	2.8620	2.7823	2.0701	1.4041	2.0000	1.9608	1.9231
		1.7167	1.6878	1.6597	1.7687	1.6043	1.7105	1.6818	1.7812
		1.7220	1.6929	1.6647	1.7544	1.7241	1.6949	1.6667	1.6394
		1.6913	1.7672	1.7672	1.7672	1.7672	1.7672	1.7672	1.7204
RESID		2.77	4.3321	4.4983	3.9735	4.7771	.9119	4.2169	3.7572
		3.8997	5.3619	2.5445	1.9851	2.9197	4.7281	3.6117	-1.9608
		2.8199	2.5317	2.8807	2.6000	2.7290	2.6565	2.7726	2.6978
		2.7257	2.6534	2.7464	2.6730	2.7565	2.6826	2.7576	2.6836
		2.8150	2.6076	2.6076	2.6076	2.6076	2.6076	2.6076	2.6135
NAT G		4.83	3.7267	1.7964	2.1569	1.9194	1.3183	1.1152	2.0221
		3.4234	.6969	1.9031	4.2445	-.1629	3.4258	4.5741	1.5083
		2.0408	2.0000	2.1008	2.0576	2.0161	1.8445	1.6818	1.7812
		1.7220	1.6929	1.6647	1.7544	1.7241	1.6949	1.6667	1.6394
		1.6913	1.7672	1.7672	1.7672	1.7672	1.7672	1.7672	1.7204
COAL		1.66	-3.6145	-.6250	1.2579	.6211	17.2839	-11.0526	1.7751
		-2.3256	.0000	2.9762	-.5780	-1.7442	1.7751	.5814	1.7341
		1.1364	1.1236	.5556	1.1050	1.0929	1.0811	1.0695	1.0582
		1.0363	1.0256	1.0152	1.0050	.9950	.9852	.9756	.9569
		.9479	.9390	.9390	.9390	.9390	.9390	.9390	.9390
LPG		12.38	.9693	1.8400	.9427	1.9455	1.6794	1.8769	2.3581
		1.6559	1.9122	1.5288	1.3689	1.0128	1.6711	1.1177	1.1704
		1.4575	1.3741	1.4787	1.3965	1.4371	1.4168	1.4552	1.3769
		1.3943	1.4301	1.4642	1.3896	1.4233	1.4553	1.4344	1.4141
		1.4237	1.4037	1.4037	1.4037	1.4037	1.4037	1.4037	1.4442
DOE REGION	2.	13.41	.2983	.8178	.0737	.2948	1.1021	.7994	.5047
ELECT		.5739	.7846	.2831	.3529	.7736	.7676	.2770	1.1050
		.3888	.4519	.3856	.4481	.4461	.3807	.4425	.3776
		.4370	.3729	.4334	.4316	.4297	.4279	.4260	.3636
		.4209	.4192	.4192	.4192	.4192	.4192	.4192	.4227
DIST		4.52	.6637	3.7363	2.1187	2.9046	2.8226	2.9412	3.6190
		2.9412	3.0357	2.9463	2.1886	1.3180	2.4390	2.2222	2.0186
		1.6517	1.7725	1.5965	1.7143	1.6854	1.7956	1.6282	1.7356
		1.6774	1.6497	1.7478	1.7178	1.6888	1.6607	1.7503	1.7202
		1.6630	1.6358	1.6358	1.6358	1.6358	1.6358	1.6358	1.6911
RESID		2.84	7.3944	3.2787	3.1746	4.6154	3.5294	3.9773	5.4645
		4.1451	3.9801	4.3062	2.9816	1.3363	3.0769	2.9851	1.0352
		2.6210	2.7505	2.6769	2.7933	2.7174	2.6455	2.7491	2.6756
		2.6941	2.7778	2.7027	2.6316	2.8490	2.6316	2.6991	2.7595

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2.7826	2.7073	2.9654	1.9200	1.4129	2.3220	1.9667	2.0772	1.4535
1.7192	1.6901	1.6621	1.7711	1.6064	1.7128	1.6839	1.7834	1.6270
1.7241	1.6949	1.6667	1.7564	1.6111	1.6987	1.7817	1.6411	1.7223
1.6931	1.6649	1.6649	1.6649	1.6649	1.6649			
3.05	7.2131	3.0581	2.9674	4.0346	3.6011	3.7433	5.1546	
3.9216	3.7736	4.0909	2.8384	1.2739	2.9350	2.8513	.9901	1.5686
2.7027	2.6316	2.7473	2.8520	2.5997	2.7027	2.7961	2.7200	2.6480
2.7314	2.8588	2.7338	2.8011	2.7248	2.6525	2.7132	2.7673	2.6928
2.6222	2.7875	2.7875	2.7875	2.7875	2.7875			
3.93	4.0712	2.2005	2.1531	2.3419	1.3730	1.3544	2.2272	
3.2680	1.0549	2.0877	4.2945	.1961	3.5225	4.5369	1.4467	1.9608
2.0979	2.0548	2.0134	1.9737	2.0968	2.0537	2.0124	1.9727	2.0833
2.0408	2.1429	1.9580	2.0576	2.0161	2.1080	2.0645	2.0228	1.9826
2.0656	2.0238	2.0238	2.0238	2.0238	2.0238			
1.83	3.8251	6.8421	-2.4631	1.0101	-1.5000	.0000	3.0457	
1.4778	2.9126	1.4151	.4651	.4630	.4608	.0000	1.8349	-.9009
.9091	.9009	1.3393	.8811	.8734	1.2987	.8547	1.2712	.8368
.8299	1.2346	.8130	1.2097	.7968	1.1858	1.1719	.7722	1.1494
1.1364	.7491	.7491	.7491	.7491	.7491			
9.61	1.6649	-1.0235	1.4478	2.2426	1.4955	1.9646	1.9268	
1.7958	1.9499	1.8215	1.5206	5.3744	2.7592	2.1969	2.9459	1.7788
1.4438	1.4232	1.4032	1.4567	1.4357	1.4154	1.3957	1.4453	1.4247
1.4047	1.4512	1.4304	1.4103	1.4539	1.4330	1.4128	1.4537	1.3731
1.4723	1.3929	1.3929	1.3929	1.3929	1.3929			
DOE REGION 5.								
ELECT	14.39	.2085	-.2774	.1391	.9028	.4818	.6849	.9524
	.4717	1.4085	.2646	.0660	2.0435	.8398	.8969	1.3968
	.4377	.4318	.3685	.4284	.4266	.4230	.4212	.4194
	.4177	.4159	.4142	.4125	.4108	.4091	.4074	.4039
	.4023	.4007	.4007	.4007	.4007	.4007	.4007	.4007
DIST	4.45	.8989	.8909	2.6490	2.3656	3.3613	2.4390	3.9683
	2.8626	3.1540	3.0576	1.5707	2.2337	2.5210	2.1311	2.2472
	1.6897	1.6616	1.7831	1.6058	1.7241	1.6949	1.6667	1.7760
	1.7173	1.6883	1.7880	1.6311	1.7284	1.6990	1.6706	1.6148
	1.7026	1.6741	1.6741	1.6741	1.6741	1.6741		
	2.65	1.8868	2.5926	4.6931	3.7931	4.6512	4.1270	3.3537
	4.1298	3.3994	4.6575	2.3560	3.8363	2.7094	2.8777	2.5641
	2.6549	2.8017	2.7254	2.6531	2.7833	2.7079	2.6365	2.7523
	2.7826	2.7073	2.6359	2.7287	2.8125	2.5836	2.8148	2.7378
	2.7322	2.6596	2.6596	2.6596	2.6596	2.6596		
NAT G	2.80	3.2143	3.8062	3.3333	1.9355	1.8987	1.5528	2.7523
	2.3810	3.1977	3.0986	2.7322	3.1915	3.6082	2.4876	1.6990
	2.0930	2.0501	2.0089	1.9694	2.1459	1.8907	2.0619	2.2222
	1.9380	2.0912	2.0484	2.0073	2.1467	1.9264	2.0619	2.0202
	1.9386	2.0602	2.0602	2.0602	2.0602	2.0602		
COAL	1.36	-2.2059	8.2707	-4.8611	3.6496	7.7465	.0000	3.2680
	.6329	-1.2579	1.2739	-3.1447	16.8831	-.5556	-6.1453	4.1667
	1.1696	.5780	1.1494	1.1364	1.1236	1.1111	1.0989	.5435
	1.0695	1.0582	1.0471	1.0363	1.0256	1.0152	1.0050	.9852
	.9756	.9662	.9662	.9662	.9662	.9662		
LPG	10.14	.6903	1.0774	1.1628	2.7778	1.3980	2.2978	2.5157
	1.8405	2.3236	1.9344	1.4852	2.4390	1.9048	1.5576	1.8405
	1.4085	1.4620	1.4409	1.4205	1.4006	1.4503	1.4295	1.4094
	1.3699	1.4801	1.3950	1.4384	1.4180	1.4590	1.3781	1.4775

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	1.1905	1.1765	1.2685	1.1482	1.2384	1.1213	1.2097	1.1952	1.1811
	1.2646	1.1527	1.2346	1.1257	1.2059	1.1916	1.1775	1.2534	1.1494
	1.2238	1.2090	1.2090	1.2090	1.2090	1.2090			
LPG	11.72	.4266	1.1895	1.0076	2.7431	1.1327	2.1600	2.3493	
	1.7598	2.3308	1.8369	1.2266	1.5681	1.4737	1.2448	1.1612	1.3504
	1.3991	1.4455	1.4249	1.4687	1.3845	1.4277	1.4688	1.3872	1.4277
	1.4663	1.3873	1.4253	1.4615	1.3850	1.4754	1.4001	1.4339	1.4136
	1.4455	1.4249	1.4249	1.4249	1.4249	1.4249			
NAT G	7.27	3.0261	1.3351	1.5810	1.0376	.6419	.3826	1.1436	
	2.2613	.0000	1.1056	3.5237	-.3521	2.4735	3.7931	1.1074	1.3143
	1.4054	1.2793	1.3684	1.3499	1.3320	1.4156	1.2961	1.3780	1.3592
	1.3410	1.4178	1.3048	1.3800	1.3612	1.3429	1.3251	1.3949	1.3758
DOE REGION 4.	1.3571	1.3389	1.3389	1.3389	1.3389	1.3389			
ELECT	23.35	1.2848	1.3108	.6260	1.1613	1.7220	.9674	1.7166	
	1.4129	.9675	1.5332	.5662	1.3889	1.5920	1.0933	1.5862	1.3840
	.9100	.9018	.9282	.8856	.9115	.9033	.9284	.8870	.9118
	.9035	.9274	.9189	.9105	.9023	.8942	.9169	.9085	.9004
	.9221	.9136	.9136	.9136	.9136	.9136			
DIST	6.11	.8183	1.6234	1.5974	1.8868	2.6235	1.0526	3.2738	
	1.8732	2.5460	2.7586	.4027	2.4064	2.4804	1.5287	2.1330	1.9656
	1.2048	1.1905	1.1765	1.1628	1.2644	1.1351	1.2346	1.2195	1.2048
	1.1905	1.1765	1.1628	1.1628	1.2539	1.1352	1.2245	1.2097	1.1952
	1.1673	1.2500	1.2500	1.2500	1.2500	1.2500			
LPG	9.61	1.6649	-1.0235	1.4478	2.2426	1.4955	1.9646	1.9268	
	1.7958	1.9499	1.8215	1.5206	5.3744	2.7592	2.1969	2.9459	1.7788
	1.4438	1.4232	1.4032	1.4567	1.4357	1.4154	1.3957	1.4453	1.4247
	1.4047	1.4512	1.4304	1.4103	1.4539	1.4330	1.4128	1.4537	1.3731
	1.4723	1.3929	1.3929	1.3929	1.3929	1.3929			
NAT G	6.01	1.1647	3.6184	2.8571	1.0802	.4580	1.0638	.9023	
	1.7884	2.0498	2.2956	1.2623	1.8006	2.1769	1.5979	.6553	1.6927
	1.4085	1.2626	1.3716	1.3530	1.3350	1.4371	1.2987	1.3986	1.3793
	1.3605	1.3423	1.3245	1.3072	1.3979	1.3786	1.3598	1.3416	1.3238
	1.4070	1.2884	1.2884	1.2884	1.2884	1.2884			
DOE REGION 5.	23.95	1.2109	1.3614	.4477	.4862	1.0887	1.2764	1.3785	
ELECT	.8547	.6163	1.1485	.9084	1.1253	1.7804	1.6764	1.6129	.8113
	.9097	.9015	.9278	.8853	.9112	.9030	.9281	.8867	.9115
	.9355	.8949	.9186	.9102	.9020	.8940	.9166	.9083	.9001
	.9218	.9134	.9134	.9134	.9134	.9134			
DIST	6.87	.5822	1.0130	1.4327	2.2599	1.6575	2.0380	2.6631	
	2.2049	2.0305	2.2388	1.4599	1.0791	1.6607	1.5169	1.6092	1.1312
	1.2304	1.1050	1.2022	1.1879	1.2807	1.1591	1.1458	1.2358	1.2208
	1.2060	1.1917	1.1776	1.1639	1.2464	1.1364	1.2172	1.2026	1.1883
	1.1743	1.2500	1.2500	1.2500	1.2500	1.2500			
LPG	10.14	.6903	1.0774	1.1628	2.7778	1.3980	2.2978	2.5157	
	1.8405	2.3236	1.9344	1.4852	2.4390	1.9048	1.5576	1.8405	1.5813
	1.4085	1.4620	1.4409	1.4205	1.4006	1.4503	1.4295	1.4094	1.4560
	1.3699	1.4801	1.3950	1.4384	1.4180	1.4590	1.3781	1.4775	1.3978
	1.4360	1.4156	1.4156	1.4156	1.4156	1.4156			
NAT G	6.45	2.4806	2.2693	2.0710	1.0145	.5739	.5706	.9929	
	1.6854	1.1050	1.6393	2.4194	1.1811	2.4643	2.5316	.9877	1.4670
	1.3253	1.4269	1.2896	1.3889	1.3699	1.3514	1.3333	1.3158	1.4069
	1.3874	1.3684	1.3499	1.3320	1.3145	1.3972	1.3780	1.3592	1.3410

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DOE REGION 3.														
ELECT	.8547	.4237	.8439	.4184	.8333	.8264	.4098	.8163	.8097					
	.8032	.3984	.3984	.3984	.3984	.3984								
	20.71	1.4003	.0952	-.0476	-.8567	.3841	1.1478	1.2766						
	.0934	.0466	.2797	-.8368	-.6095	-.9434	.9524	.2830	.0470					
	.0470	.0940	.0469	.0469	.0938	.0469	.0468	.0936	.0468					
	.0468	.0935	.0467	.0933	.0466	.0466	.0466	.0931	.0465					
	.0465	.0929	.0929	.0929	.0929	.0929								
DIST	4.54	.6608	1.3129	1.9438	3.6017	2.2495	3.8000	3.4682						
	3.1657	2.8881	2.9825	2.2147	1.5000	2.4630	2.0833	2.1978	1.5361					
	1.6641	1.6369	1.6105	1.5850	1.5603	1.6760	1.6484	1.6216	1.5957					
	1.5707	1.6753	1.5209	1.6230	1.5971	1.6929	1.5458	1.6393	1.6129					
	1.7007	1.5608	1.5608	1.5608	1.5608	1.5608								
RESID	2.87	7.3171	3.2468	3.1447	4.5732	3.4985	3.9437	5.1491						
	4.1237	3.9604	4.5238	2.7335	1.5521	3.0568	2.7542	1.0309	1.6327					
	2.4096	2.5490	2.4857	2.4254	2.5501	2.4867	2.4263	2.5381	2.4752					
	2.4155	2.5157	2.4540	2.5449	2.4818	2.4217	2.5035	2.5780	2.3810					
	2.5840	2.3929	2.3929	2.3929	2.3929	2.3929								
NAT G	5.87	3.5775	1.6447	1.9418	1.2698	.7837	.4666	1.2384						
	2.7523	.1488	1.1887	4.1116	-.2821	2.9703	4.2582	1.3175	1.5605					
	1.5365	1.6394	1.4888	1.5892	1.5644	1.5403	1.6336	1.4925	1.5837					
	1.5590	1.5351	1.6199	1.5941	1.5690	1.5448	1.5213	1.5984	1.5733					
	1.5489	1.5253	1.5253	1.5253	1.5253	1.5253								
COAL	1.50	3.3333	2.5807	.0000	-.6289	2.5316	.6173	-1.8405						
	4.3750	-1.1976	3.6364	-2.9240	-.6024	-.6061	-.6098	1.2270	1.8182					
	.5952	.5917	.5882	1.1696	.5780	.5747	.5714	.5682	1.1299					
	.5587	.5556	.5525	1.0989	.5435	.5405	.5376	1.0695	.5291					
	.5263	1.0471	1.0471	1.0471	1.0471	1.0471								
DOE REGION 4.														
ELECT	20.55	.8759	.3859	.5286	1.7208	.9398	1.5363	.5961						
	1.0027	2.3014	.2206	-.1320	2.6884	1.1588	.5091	.8020	.9213					
	.0830	.0415	.0829	.0414	.0828	.0414	.0827	.0413	.0826					
	.0413	.0825	.0412	.0824	.0412	.0823	.0411	.0822	.0411					
	.0821	.0410	.0410	.0410	.0410	.0410								
DIST	4.07	.9828	1.9465	2.3866	2.7972	3.6281	2.1882	4.4968						
	2.8688	3.3865	3.6609	1.1152	2.7574	3.0411	2.2569	2.7165	2.3140					
	1.6155	1.5898	1.7214	1.5385	1.6667	1.6393	1.6129	1.5873	1.5625					
	1.6783	1.5131	1.6260	1.7333	1.5727	1.5484	1.6518	1.6250	1.5990					
	1.6949	1.5476	1.5476	1.5476	1.5476	1.5476								
RESID	2.84	2.1127	3.4483	4.0000	3.8462	4.0123	4.1543	3.1339						
	3.8674	3.7234	4.3590	2.4570	3.1175	2.5581	2.7211	2.6490	3.0107					
	2.5052	2.4440	2.5845	2.3256	2.4621	2.5878	2.5225	2.4605	2.4014					
	2.5126	2.4510	2.5518	2.4883	2.4279	2.5185	2.4566	2.5388	2.4759					
	2.4161	2.4902	2.4902	2.4902	2.4902	2.4902								
NAT G	4.95	1.8182	4.3651	3.2319	1.1050	.7286	1.2658	1.2500						
	1.7637	2.2530	2.7119	1.4852	2.1138	2.5478	1.8634	.6098	1.9697					
	1.6345	1.4620	1.5850	1.5603	1.5363	1.6506	1.4885	1.6000	1.5748					
	1.5504	1.5267	1.6291	1.4797	1.5796	1.5550	1.6490	1.5064	1.5982					
	1.5730	1.5487	1.5487	1.5487	1.5487	1.5487								
COAL	2.24	.8929	.8850	.0000	1.3158	1.7316	.4255	-.8475						
	.8547	.8475	.0000	-.8403	8.4746	1.1719	-7.3359	1.6667	.0000					
	.8197	.4065	.8097	.8032	.3984	.7937	.7874	.7812	.3876					
	.7722	.7663	.7605	.7547	.7491	.7317	.7407	.7353	.7299					
	.7246	.7194	.7194	.7194	.7194	.7194								

DOE REGION 5.	21.80	.4587	.1370	.1368	.4098	.5896	.9017	.9383
ELECT	.4869	.8811	.0437	.0437	.9607	.4758	1.1192	.6386
	.0422	.0843	.0421	.0842	.0421	.0841	.0420	.0840
	.0839	.0419	.0838	.0418	.0836	.0418	.0835	.0417
	.0417	.0833	.0833	.0833	.0833	.0833		.0834
DIST	4.62	.6494	1.5054	1.9068	3.1185	2.4194	2.7559	3.8314
	2.9520	2.8674	2.9617	1.8613	1.6611	2.2876	2.0767	2.1909
	1.6591	1.6320	1.6058	1.5805	1.5559	1.6713	1.6438	1.6172
	1.5666	1.6709	1.6435	1.6169	1.5912	1.5663	1.6607	1.6336
	1.5819	1.6685	1.6685	1.6685	1.6685	1.6685		1.6074
RESID	2.85	4.9123	4.0134	3.5370	4.6584	1.1869	4.3988	3.6517
	4.0650	4.9479	2.7295	2.1739	2.6005	4.1475	3.3186	-1.0707
	2.5424	2.4793	2.4194	2.5591	2.4952	2.4345	2.3766	2.5000
	2.3769	2.4876	2.5890	2.3659	2.4653	2.5564	2.4927	2.4320
	2.4523	2.5266	2.5266	2.5266	2.5266	2.5266		2.5140
NAT G	5.43	2.9466	2.6834	2.4390	1.1905	.6723	.8347	.9934
	1.9672	1.2862	1.9048	2.8037	1.2121	2.8443	2.9112	1.1315
	1.5131	1.6260	1.6000	1.5748	1.5504	1.5267	1.5038	1.6049
	1.5550	1.5312	1.6241	1.5982	1.4607	1.6611	1.5250	1.5021
	1.5609	1.6393	1.6393	1.6393	1.6393	1.6393		1.5856
COAL	1.81	2.7624	1.6129	.5291	-.5263	2.1164	1.0363	-1.5385
	5.2083	-2.9703	2.5510	-1.4925	2.0202	.4950	-.9852	1.4925
	.9852	.4878	.9709	.4808	.4785	.9524	.4717	.9390
	.9259	.4587	.9132	.4525	.9009	.4464	.8889	.4405
	.8696	.4310	.4310	.4310	.4310	.4310		.8772

ATTACHMENT 8.11
SCOPE OF ARCHITECT - ENGINEERS SERVICES

CESAM-EN-DM

17 April 1995
rev'd: June 23, 1995

ELECTRICAL DEMAND

REDUCTION STUDY

ABERDEEN PROVING GROUND, MARYLAND

Performed as part of the
ENERGY ENGINEERING ANALYSIS PROGRAM (EEAP)

SCOPE OF WORK
FOR A
LIMITED ENERGY STUDY

ELECTRIC DEMAND PROFILE &
DEMAND/COST REDUCTION

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 - 7.3 Evaluate Selected ECOs
 - 7.4 Combine ECOs into Recommended Projects
 - 7.5 Submittals, Presentations and Reviews

ANNEXES

- A - DETAILED SCOPE OF WORK
- B - EXECUTIVE SUMMARY GUIDELINE

1. BRIEF DESCRIPTION OF WORK: The Architect-Engineer (AE) shall:

1.1 Perform a field investigation to establish electrical demand profile for all Government owned substations and feeders at Aberdeen Proving Ground (Edgewood and Aberdeen areas). Recommend generically applicable technologies for reduction of electrical demand and/or cost based upon the demand profile and categories of usage for facilities connected to the feeders.

1.2 Evaluate specific ECOs to determine their energy savings potential and economic feasibility.

1.3 Provide project documentation for recommended ECOs as detailed herein.

1.4 Prepare a comprehensive report to document all work performed, the results and all recommendations.

2. GENERAL

2.1 This study is limited to the evaluation of the specific buildings, systems, or ECOs listed in Annex A, DETAILED SCOPE OF WORK.

2.2 The information and analysis outlined herein are considered to be minimum requirements for adequate performance of this study.

2.3 For the buildings, systems or ECOs listed in Annex A, all methods of energy conservation which are reasonable and practical shall be considered, including improvements of operational methods and procedures as well as facilities. All energy conservation opportunities which produce energy or dollar savings related to electrical consumption shall be documented in this report. Any energy conservation opportunity considered infeasible shall also be documented in the report with reasons for elimination.

2.4 The study shall consider the use of all energy sources applicable to each building, system, or ECO, as relates to reduction of electrical consumption or shifting of demand to a more favorable rate structure time.

2.5 The "Energy Conservation Investment Program (ECIP) Guidance", described in letter from DAIM-FDF-U, dated 10 Jan 1994 (including current updates) establishes criteria for ECIP projects and shall be used for performing the economic analyses of all ECOs and projects. The program, Life Cycle Cost In Design (LCCID), has been developed for performing life cycle cost calculations in accordance with ECIP guidelines and is referenced in the ECIP Guidance. If any program other than LCCID is proposed for life cycle cost analysis, it must use the mode of calculation specified

in the ECIP Guidance. The output must be in the format of the ECIP LCCA summary sheet, and it must be submitted for approval to the Contracting Officer.

2.6 Computer modeling will not be used to determine the energy savings of ECOs which would replace or significantly change an existing heating, ventilating, and air-conditioning (HVAC) system.

2.7 Energy conservation opportunities determined to be technically and economically feasible shall be developed into projects acceptable to installation personnel. This may involve combining similar ECOs into larger packages which will qualify for ECIP or FEMP funding, and determining in coordination with installation personnel the appropriate packaging and implementation approach for all feasible ECOs.

2.7.1 Projects which qualify for ECIP funding shall be identified, separately listed, and prioritized by the Savings to Investment Ratio (SIR).

2.7.2 All feasible non-ECIP projects shall be ranked in order of highest to lowest SIR.

2.7.3 At some installations Energy Conservation and Management (ECAM) funding will be used instead of ECIP funding. The criteria for each program is the same. The Director of Public Works will indicate which program is used at this installation. This Scope of Work mentions only ECIP, however, ECAM is also meant.

2.8 Metric Reporting Requirements: In this study, the analyses of the ECOs may be performed using English or Metric units as long as they are consistent throughout the report. The final results of energy savings for individual recommended projects and for the overall study will be reported in units of MegaBTU per year and in MegaWattHours per year. Paragraph 7.5.3 details requirements for the contents of the final submittal.

3. PROJECT MANAGEMENT

3.1 Project Managers. The AE shall designate a project manager to serve as a point of contact and liaison for work required under this contract. Upon award of this contract, the individual shall be immediately designated in writing. The AE's designated project manager shall be approved by the Contracting Officer prior to commencement of work. This designated individual shall be responsible for coordination of work required under this contract. The Contracting Officer will designate a project manager to serve as the Government's point of contact and liaison for all work required under this contract. This individual will be the Government's representative.

3.2 Installation Assistance. The Commanding Officer or authorized representative at the installation will designate an individual to assist the AE in obtaining information and establishing contacts necessary to accomplish the work required under this contract. This individual will be the installation representative.

3.3 Public Disclosures. The AE shall make no public announcements or disclosures relative to information contained or developed in this contract, except as authorized by the Contracting Officer.

3.4 Meetings. Meetings will be scheduled whenever requested by the AE or the Contracting Officer for the resolution of questions or problems encountered in the performance of the work. The AE's project manager and the Government's representative shall be required to attend and participate in all meetings pertinent to the work required under this contract as directed by the Contracting Officer. These meetings, if necessary, will be in addition to the presentation and review conferences.

3.5 Site Visits, Inspections, and Investigations. The AE shall visit and inspect/investigate the site of the project as necessary and required during the preparation and accomplishment of the work.

3.6 Records

3.6.1 The AE shall provide a record of all significant conferences, meetings, discussions, verbal directions, telephone conversations, etc., with Government representative(s) relative to this contract in which the AE and/or designated representative(s) thereof participated. These records shall be dated and shall identify the contract number, and modification number if applicable, participating personnel, subject discussed and conclusions reached. The AE shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the records.

3.6.2 The AE shall provide a record of requests for and/or receipt of Government-furnished material, data, documents, information, etc., which if not furnished in a timely manner, would significantly impair the normal progression of the work under this contract. The records shall be dated and shall identify the contract number and modification number, if applicable. The AE shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the record of request or receipt of material.

3.7 Interviews. The AE and the Government's representative shall conduct entry and exit interviews with the Director of Public Works before starting work at the installation and after completion of the field work. The Government's representative shall schedule the interviews at least one week in advance.

3.7.1 Entry. The entry interview shall describe the intended

procedures for the survey and shall be conducted prior to commencing work at the facility. As a minimum, the interview shall cover the following points:

- a. Schedules.
- b. Names of energy analysts who will be conducting the site survey.
- c. Proposed working hours.
- d. Support requirements from the Director of Public Works. The A-E may be required to obtain clearance for access to some areas of the installation (Edgewood and Aberdeen areas).

3.7.2 Exit. The exit interview shall be held when the field work is essentially complete; it shall briefly describe the items surveyed and probable areas of energy conservation. The interview shall also solicit input and advice from the Director of Public Works.

4. SERVICES AND MATERIALS. All services, materials (except those specifically enumerated to be furnished by the Government), labor, supervision, and travel necessary to perform the work and render the data required under this contract are included in the lump sum price of the contract.

5. PROJECT DOCUMENTATION. All energy conservation opportunities which the AE has considered shall be included in one of the following categories and presented in the report as such:

5.1 ECIP Projects. To qualify as an ECIP project, an ECO, or several ECOs which have been combined, must have a construction cost estimate greater than \$300,000, a Savings to Investment Ratio (SIR) greater than 1.25 and a simple payback period of less than ten years. The overall project and each discrete part of the project shall have an SIR greater than 1.25. All projects meeting the above criteria shall be arranged as specified in paragraph 2.7.1. A life cycle cost analysis summary sheet shall be developed for each ECO and for the overall project when more than one ECO are combined. The energy savings for projects consisting of multiple ECOs must take into account the synergistic effects of the individual ECOs.

5.2 Non-ECIP Projects. Projects which do not meet ECIP criteria with regard to cost estimate, but which have an SIR greater than 1.25 shall be documented. Projects or ECOs in this category shall be arranged as specified in paragraph 2.7.2 and shall be provided with the following documentation: the life cycle cost analysis (LCCA) summary sheet completely filled out, a description of the work to be accomplished, backup data for the LCCA (energy savings calculations and cost estimate), and the simple payback

period. The energy savings for projects consisting of multiple ECOS must take into account the synergistic effects of the individual ECOS. In addition these projects shall have the necessary documentation prepared, as required by the Government's representative, for one of the following categories:

a. Federal Energy Management Program (FEMP) Projects. A FEMP (or O&M Energy) project is one that results in needed maintenance or repair to an existing facility, or replaces a failed or failing existing facility, and also results in energy savings. The criteria are similar to the criteria for ECIP projects, ie, $SIR \geq 1.25$, and simple payback period of less than ten years. Preparation of programming documents is not included as a task under this scope of work. In the FEMP program, a system may be defined as "failed or failing" if it is inefficient or technically obsolete. However, if this strategy is used to justify a proposed project, the equipment to be replaced must have been in use for at least three years.

b. Low Cost/No Cost Projects. These are projects which the Director of Public Works (DPW) can perform using his resources. Documentation shall be as required by the DPW.

5.3 Nonfeasible ECOS. All ECOS which the AE has considered but which are not feasible, shall be documented in the report with reasons and justifications showing why they were rejected.

6. DETAILED SCOPE OF WORK. The Detailed Scope of Work is contained in Annex A.

7. WORK TO BE ACCOMPLISHED.

7.1 Perform a Limited Site Survey. The AE shall obtain all necessary data to evaluate the ECOS or projects by conducting a site survey. However, the AE is encouraged to use any data that may have been documented in a previous study. The AE shall document his site survey on forms developed for the survey, or on standard forms, and submit these completed forms as part of the report. All test and/or measurement equipment shall be properly calibrated prior to its use.

7.2 Recommend Selected Projects. The AE shall recommend the projects and ECOS as stated in Annex A. If the project or ECO is acceptable as is, that is, there are only operational changes to be made, the project shall then be analyzed based on current ECIP criteria. If the project can only be partially accepted for operational purposes, the A-E shall incorporate the constraints in a reevaluation of cost and consumption impact.

7.3 Evaluate Selected ECOS. The AE shall analyze the recommended ECOS which have been recommended and accepted. These ECOS shall be analyzed in detail to determine their feasibility. Savings to Investment Ratios (SIRs) shall be determined using

current ECIP guidance. The AE shall provide all data and calculations needed to support the recommended ECO. All assumptions and engineering equations shall be clearly stated. Calculations shall be prepared showing how all numbers in the ECO were figured. Calculations shall be an orderly step-by-step progression from the first assumption to the final number. Descriptions of the products, manufacturers catalog cuts, pertinent drawings and sketches shall also be included. A life cycle cost analysis summary sheet shall be prepared for each ECO and included as part of the supporting data.

7.4 Combine ECOs Into Recommended Projects. During the Interim Review Conference, as outlined in paragraph 7.5.2, the AE will be advised of the DEH's preferred packaging of recommended ECOs into projects for implementation. Some projects may be a combination of several ECOs, and others may contain only one. These projects will be evaluated and arranged as outlined in paragraphs 5.1, 5.2, and 5.3. Energy savings calculations shall take into account the synergistic effects of multiple ECOs within a project and the effects of one project upon another. The results of this effort will be reported in the Final Submittal per par 7.5.3.

7.5 Submittals, Presentations and Reviews. The work accomplished shall be fully documented by a comprehensive report. The report shall have a table of contents and shall be indexed. Tabs and dividers shall clearly and distinctly divide sections, subsections, and appendices. All pages shall be numbered. Names of the persons primarily responsible for the project shall be included. The AE shall give a formal presentation of the interim submittal to installation, command, and other Government personnel. Slides or view graphs showing the results of the study to date shall be used during the presentation. During the presentation, the personnel in attendance shall be given ample opportunity to ask questions and discuss any changes deemed necessary to the study. A review conference will be conducted the same day, following the presentation. Each comment presented at the review conference will be discussed and resolved or action items assigned. It is anticipated that the presentation and review conference will require approximately one working day. The presentation and review conference will be at the installation on the date agreeable to the Director of Public Works, the AE and the Government's representative. The Contracting Officer may require a resubmittal of any document(s), if such document(s) are not approved because they are determined by the Contracting Officer to be inadequate for the intended purpose.

7.5.1 Interim Submittal. A report of field study findings will be submitted and reviewed for acceptance. Results of the field study shall include an executive summary, recording of field study results, record of feeder or substation monitoring, interview records to include BG&E and Government personnel, recommended application of energy or cost savings measures, illustrate methods

and justifications for approaches taken, and a plan of the work remaining to complete the study. The survey forms completed during field study may be submitted in final form with the submittal. They should be clearly marked at the time of submittal that they are to be retained. They shall be bound in a standard three-ring binder which will allow repeated disassembly and reassembly of the material contained within. Cost/electrical demand reduction measures shall be listed for generic application. Demand on specific feeders shall be noted against recommended reduction measures for further study as given under Appendix A. At the Interim submittal and review conference, the Government and AE representatives shall coordinate with the Director of Public Works to provide the AE with direction for selection, packaging, and fiscal year for which programming or implementation documents shall be prepared.

7.5.2 Pre-Final Submittal. The AE shall prepare and submit the final report when all sections of the report are 100% complete and all comments from the interim submittal have been resolved. The AE shall submit the Scope of Work for the study and any modifications to the Scope of Work as an appendix to the submittal. The report shall contain a narrative summary of conclusions and recommendations, together with all raw and supporting data, methods used, and sources of information. The report shall integrate all aspects of the study. The recommended projects, as determined in accordance with paragraph 5, shall be presented in order of priority by SIR. The lists of ECOs (demand/cost reduction measures) specified in paragraph 7.5.1 shall also be included for continuity. The final report and all appendices shall be bound in standard three-ring binders which will allow repeated disassembly and reassembly. The final report shall be arranged to include:

a. An Executive Summary to give a brief overview of what was accomplished and the results of this study using graphs, tables and charts as much as possible (See Annex B for minimum requirements).

b. The narrative report describing the problem to be studied, the approach to be used, and the results of this study.

c. Documentation for the recommended projects (includes LCCA Summary Sheets).

1) All ECOs eliminated from consideration shall be grouped into one listing with reasons for their elimination as discussed in par 5.3.

2) All ECOs which were analyzed shall be grouped into two listings, recommended and non-recommended, each arranged in order of descending SIR. These lists may be subdivided by building, substation, feeder or area as appropriate for the study.

d. Appendices to include as a minimum:

- 1) Energy cost development and backup data
- 2) Detailed calculations
- 3) Cost estimates
- 4) Computer printouts (where applicable)
- 5) Annotated comments from the Interim submittal
- 6) Scope of Work
- 7) Demand Side Management literature from local utility

7.5.3 Final Submittal. Any revisions or corrections resulting from comments made during the review of the Pre-Final report or during the presentation and review conference shall be incorporated into the Final report. These revisions or corrections may be in the form of replacement pages, which may be inserted in the Pre-Final report, or complete new volumes. Pen and ink changes or errata sheets will not be acceptable. If replacement pages are to be issued, it shall be clearly stated with the Pre-Final submittal that the submitted documents will be changed only with comments made during the Pre-Final conference and that volumes should be retained. Failure to do so will require resubmission of complete volumes. If new volumes are submitted, they shall be in standard three ring binders and shall contain all information presented in the Pre-Final report with any necessary changes made. Detailed instructions of what to do with the replacement pages shall be securely attached to the replacement pages.

ANNEX A

ELECTRICAL DEMAND PROFILE AND CONSUMPTION/COST REDUCTION

ABERDEEN PROVING GROUND

1. GENERAL The Directorate of Public Works (DPW) at Aberdeen Proving Ground, MD has available on-line information for electrical consumption for the Aberdeen and Edgewood areas, as a whole. However, no data is available for individual users, facilities, feeders, or substations. In the absence of such data, no basis exists for informed decision on potential methods of reducing demand or shifting it to a more favorable rate structure time. The DPW has one-line drawings and attribute database fields for all Government-owned substations and feeders, but no recorded data for electrical demand profile. Purpose of this study is to establish the demand profile by substation and feeder, identify anomalous consumption, peak hour users, and cost drivers on the feeders, investigate the physical and operational features of the consumers, recommend operational and physical changes for reducing consumption and/or cost, then perform an analysis of the impact of implementing selected recommendations. General tasks to be performed are as follows:

a. Field Study of Substations/Feeders: Monitor, record and report the demand profile at all substations, by feeder. Identify feeders for which anomalous loading occurs, where large demand exists during peak rate structure hours, or where load is otherwise identified for reduction of consumption or cost in electrical billing. Based upon identification of the facilities and tenants supplied by the feeders, provide a listing of recommended electrical technology applications for which cost or energy savings can be realized.

b. Investigation of Specific Consumers: Based upon the above field study, investigate the potential energy and cost savings for recommended operational or physical changes to demand on selected feeders. This investigation shall result in recommended applications of operational/physical changes for specific consumers.

c. Evaluation of Cost/Consumption Impact: Perform life cycle cost analysis of the energy/cost reduction impact of implementing the recommendations.

2. AUTHORIZATION The feasibility study for this project is authorized by memorandum, CEMP-ET, subject: "Energy Engineering Analysis Program (EEAP) - FY95", dated 29 December 1994. The AE

shall make reference to this authority in the study.

3. STUDY INSTRUCTIONS If the Design Manuals, Guide Specifications, and/or Project Engineering Instructions do not cover a specific condition in question, the AE shall contact the Contracting Officer before proceeding. If there is a conflict in Engineering Instructions or other reference data, such questions or conflicts should be brought to the attention of the Contracting Officer before proceeding.

4. INSTALLATION REPRESENTATIVE The Installation Representative for this study will be Mr. Gary Testerman, Directorate of Public Works, (410) 278-5237.

5. COMPLETION AND PAYMENT SCHEDULE The following schedule shall be used as a guide in approving payments on this contract. The interim report shall be due not later than 180 days after the Authorized Receipt of Order (ARO). The Pre-Final report shall be due not later than 30 days after the interim report review conference. The Final report shall be due not later than 21 days after the Pre-Final review conference.

<u>MILESTONE</u>	<u>PERCENT OF CONTRACT AMOUNT AUTHORIZED FOR PAYMENT</u>
Entry Interview	10
Completion of Field Work	35
Receipt of Interim Submittal	50
Completion of Interim Presentation & Review	65
Completion of Pre-Final	95

6. METHOD OF PAYMENT

a. Title I. The AE shall prepare and submit to the US Army Engineer District, Baltimore, MD, partial payment estimates on ENG Form 93. All partial payments shall be based on work completed as of the 15th day of the reporting month and shall be submitted to the office of the Contracting Officer by the 18th day of the month. Copy of the ENG Form 93 should be provided to the Project Manager. Payment under this order, for which property or services are provided in a series of partial executions or deliveries, will be made within 30 days after receipt of an invoice which has been properly executed by the AE.

b. Additional Conferences. Payments for furnishing the services of technically qualified representatives to attend additional conferences, when so requested in writing by the Contracting Officer, will be made at a rate per hour for the discipline involved plus travel expenses computed in accordance with the Joint travel Regulations in effect at the time travel is performed and actual cost of transportation.

7. DETAILED TASKS

a. **Field Study of Substations/Feeders and Interim Report:** The A-E will monitor electrical demand, in kWH, on all feeders at all Government substations for the Edgewood and Aberdeen areas. Monitoring will be performed for a continuous twenty-four hour weekday period on each feeder. Monitoring may be performed at the substation or on each feeder separately outside of the substation. If monitoring shall be performed at the substation, the A-E shall provide a listing of the names and qualifications for all personnel to have access to the substations subject to DPW review and approval. Monitoring shall take advantage of existing power circuit monitors to the extent applicable. Results of monitoring shall be reported on the one-line drawings, "Substation and Feeder Data: Edgewood and Aberdeen", provided by the DPW. The DPW shall provide a Building Information Schedule (BIS) to the A-E identifying all facilities, their sizes, and their usage. Usage is denoted in accordance with AR 415-28 and is given by general category (operational, maintenance, R&D, storage and supply, administrative, etc.) of occupancy. Based upon the demand profile, size, and general category of usage, the A-E will provide generically applicable recommendations for physical changes for electrical demand reduction or load shifting to off-peak hours. These recommendations will be based upon the A-E's experience and knowledge of various successful applications of current technology to general categories of facilities. Recommendations shall include any available BG&E demand side management programs available to APG. The DPW shall make final determination of the opportunities to pursue for the Pre-Final report.

b. **Pre-Final Submittal.** The A-E shall report on the investigation of applications of physical or operational changes to electrical demand for energy/cost savings. For selected feeders, the A-E shall examine the facilities, equipment and processes which constitute the particular feeder load. This investigation should evenly distribute feeders, facilities, equipment and processes between categories of facility usage and recommendations of applicable technologies for cost/energy savings, i.e., investigation should include all general categories of usage and a maximum number of recommended technology applications. During the course of this investigation the A-E shall interview personnel utilizing facilities and equipment creating the feeder loads to determine any constraints and evaluate the potential of operational changes for energy/cost savings. The A-E shall identify application of technologies or operational changes to specific facilities, equipment and processes, and make recommendations for their implementation. The A-E shall discuss and explain why any specific technologies, facilities, operational changes, equipment, or other earlier recommendation are not recommended for further evaluation. The A-E shall prepare a list of specific operational and physical changes showing the greatest potential for energy/cost savings, supported by calculations illustrating the life cycle energy and

dollar savings, SIR, and simple pay-back period. Level of analysis shall be sufficient to support and justify recommendation for selected energy/cost savings opportunities. No preparation of DD Form 1391s is included as a part of this effort.

d. Final Submittal. The AE shall prepare and submit the final report when all sections of the report are 100% complete and all comments from the Interim and Pre-Final submittals have been resolved.

8. SAMPLE ENERGY/COST SAVINGS OPPORTUNITIES Following is a list of operational and physical changes which may be expected for consideration and evaluation as part of this scope of work. This list is provided for illustrative purposes and is not intended as a constraint or minimum requirement of the study.

a. Usage of BG&E available demand side management programs for energy/cost savings. Lighting and illumination shall not be included. Requirements or constraints for APG will be stated as will be BG&E contributions. Available literature shall be included as an Appendix.

b. Operational changes such as running emergency/backup generators during peak hours to supplement the primary electrical supply (i.e. shave peak demand). This shall include possibility of performing maintenance running during peak hours for shaving load.

c. Use of diurnal, ice storage, brine systems or other thermal storage systems where prime source is electrical.

d. Use of dessicant dehumidification systems to replace reciprocating, centrifugal, screw or other electrically driven cooling/dehumidification systems. Use of steam absorption chillers in lieu of electric for replacement/new construction.

e. Installation of programmable controllers for operation of HVAC equipment. Operation may be for time, load shedding, or other parameters in order to reduce or shift electrical demand. Note that any recommendation for such controllers should be coordinated with the DPW Master Planning office for possible constraints in relation to a planned Installation-wide UMCS system.

f. Replacement or consolidation of electrically powered HVAC equipment with more economic prime sources.

g. Use of capacitor banks/synchronous motors to improve K factor.

h. Conversion to energy efficient motors (to include resizing, variable volume, or other reductions in consumption).

i. Turn off unused, unnecessary, or redundant equipment.

j. Balancing of electrical load on circuits.

k. Modernizing of equipment used for mission/operational requirements.

Survey and analysis of demand created by lighting will not be included as a part of this scope of work.

9. GOVERNMENT FURNISHED DATA

a. Drawings, "Substation and Feeder Data: Edgewood and Aberdeen

b. Building Information Schedule (BIS)

c. DAIM-FDF-U letter dated 10 January 1994, "Energy Conservation Investment Program (ECIP) Guidance"

d. Architectural and Engineering Instructions (AEI)

10. SUBMITTAL DISTRIBUTION

ORGANIZATION	CORRESPONDENCE	INTERIM & PRE FINAL	FINAL
Commander U.S Army Aberdeen Proving Ground Support Activity ATTN: STEAP-FE-P (Mr. Testerman) Aberdeen Proving Ground, MD 21005-5001	(1)	(3)	(3)
Commander U.S. Army District, Baltimore ATTN: CENAB-EN-MP (Mr. Gross) P.O. Box 1715 Baltimore, MD 21203-1715	(1)	(3)	(3)
Commander U.S. Army District, Mobile ATTN: CESAM-EN-DM (Mr. Battaglia) P.O. Box 2288 Mobile, AL 36628-1000	(1)	(1)	(1)
Commander USAMC, Installations & Services Activity Rock Island Arsenal Bldg 60 ATTN: AMXEN-C (Mr. John Nache) Rock Island, Ill 61299-7190		(1)	(1)
U.S. Army Corps of Engineers ATTN: CEMP-ET (Mr. Gentil) 20 Massachusetts Avenue, NW Washington, DC 20314-1000			(1)*

ANNEX B

EXECUTIVE SUMMARY GUIDELINE

1. Introduction.
2. Building Data (types, number of similar buildings, sizes, etc.)
3. Present Energy Consumption of Buildings or Systems Studied.

- o Total Annual Energy Used.
- o Source Energy Consumption.

Electricity - KWH, Dollars, BTU
Fuel Oil - GALS, Dollars, BTU, MWH
Natural Gas - THERMS, Dollars, BTU, MWH
Propane - GALS, Dollars, BTU, MWH
Other - QTY, Dollars, BTU, MWH

4. Reevaluated Projects Results.
5. Energy Conservation Analysis.

- o ECOs Investigated.
- o ECOs Recommended.
- o ECOs Rejected. (Provide economics or reasons)
- o ECIP Projects Developed. (Provide list)*
- o Non-ECIP Projects Developed. (Provide list)*
- o Operational or Policy Change Recommendations.

* Include the following data from the life cycle cost analysis summary sheet: the cost (construction plus SIOH), the annual energy savings (type and amount), the annual dollar savings, the SIR, the simple payback period and the analysis date.

6. Energy and Cost Savings.
- o Total Potential Energy and Cost Savings.
 - o Percentage of Energy Conserved.

- o Energy Use and Cost Before and After the Energy Conservation Opportunities are Implemented.

U.S. Army Logistics Agency
ATTN: LOEA-PL (Mr. Keath)
New Cumberland Army Depot
New Cumberland, PA 17070-5007

(1)*

*Copy of the Final executive summary only.

ATTACHMENT 8.10
INTERIM REVIEW COMMENTS

US ARMY ENGINEER DISTRICT, MOBILE
PO BOX 2288
Mobile, Alabama, 36628-0001

Fax Cover Sheet

DATE: February 23, 1996 TIME: 11:19 AM

TO: Ted Gross, CENAB-EN-MP PHONE: (410) 962-4577
USAED, Baltimore, MD FAX: (410) 962-0917

FROM: Anthony W. Battaglia, CESAM-EN-DM PHONE: (334) 690-2618
USAED, Mobile, AL FAX: (334) 690-2424

RE: EEAP, FY95 LES, Peak Demand Study, Aberdeen Proving Ground, MD

Number of pages including cover sheet: 2

Message

Our comments on the subject study are attached. Hope all goes well with the review meeting. Please be sure that we receive the minutes of the review meeting.

We are looking forward to receiving the prefinal submittal.

Tony Battaglia

Demand Reduction Analysis for Aberdeen Proving Grounds, Maryland.
Interim Submission.

CESAM-EN-DE, ELECTRICAL COMMENTS

22 Feb 96
Wallace/694-4068

1. The Interim Submission only included the first four sections of Volume 1 and draft discussions on the first two of the seven Energy Conservation Opportunities identified on page 1-2. The AE should assure inclusion of all missing sections and backup information in the Prefinal Submittal. Also, assure inclusion of the proper information into all blank spaces within the document.
2. Data for Submeters 22 and 23, June through September 1995, page 4-6 is missing. Please provide information.
3. Provide attachments for calculations of incremental cost and monthly electric bills referenced on page 4-7, last line.
4. The basis for the potential savings produced by owning and maintaining the 115 kV-34.5 kV transformation is the elimination of the distribution demand charge currently imposed on the 34.5 kV metering. The rate structure supposedly shows this distribution demand charge. The AE should assure that the Prefinal Submittal contains the rate structure information, currently omitted in this submittal. Also, the AE should clearly prove, with the information provided, that elimination of the distribution demand charge materializes with the construction of a new substation.
5. The AE should investigate and discuss any potential incentives offered by Baltimore Gas and Electric Company for reductions in electrical demand. Page 2-2 indicates that information on Incentive Programs has been provided to the AE.

PROJECT REVIEW COMMENTS

DATE 2-22-96

Project: Electrical Demand Reduction Study, Aberdeen Area.

Location: Aberdeen

Work Request: 04FF

Type of Action: Electrical

Item Dwg.no. no. or par no.	Comments
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1. Report	
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	Page 2-7, Para 2.4: Provide a copy of the model performance and actual Bills. Table 4.2.2: Provide the formula being used to calculate the energy cost. General: The study shall be performed for the following options: a) Aberdeen Area fed from existing two 34Kv feeders. b) Aberdeen Area fed by changing the two existing 34KV feeders to 115kV. c) Aberdeen Area fed by increasing the capacity of existing 115KV system to 50MVA
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Date: 12 February 1996

Rexel Gallamoza, Mech/Elec Branch

Subject: Electrical Demand Reduction Analysis

Review Comments

1. Study should take into account the upgrade of Substation 18 which will utilize the existing 110 kV sub-transmission line to Building 120. The design will be completed mid-March time frame.
2. Substation 18 at Building 120 will be funded with Maintenance and Repair money which is readily available since the existing substation equipment is failing. Per discussion with AMC Construction Division personnel, the chances of getting a project through ECIP are very slim. MCA dollars for construction of a new substation between Harford Substation and Substation A is very doubtful in the near future. Explain other alternatives to have project funded.
3. If the Substation 18 project is completed, then how should the proposed substation project be modified.
4. The cost for two having transformers must also include relocating Substation B, unless the made underground or the conductors are run back to the station. The preference is to keep the switches in sight.

eeap-interim

File: C:\ARMS\PUBLIC\APG.DBF

Num	Name	Office	Page/Sheet	Discipline	Rm/Detail
1	GROSS	NAB-EN-MP	-	GEN	GEN
Please correct typo's, spelling, capitalization.					
2	GROSS	NAB-EN-MP	1-3	GEN	GEN
Schedule for completion of contract should be included.					
3	GROSS	NAB-EN-MP	1-4	GEN	GEN
Volume 2 should include correspondence/discussion with BG&E and relevant (not all) contacts/letters with Government personnel.					
4	GROSS	NAB-EN-MP	2-5	GEN	ECO'S
Selection of candidate ECO's should be noted as being made by APG and the Corps.					
5	GROSS	NAB-EN-MP	2-6	GEN	ECO'S
A discussion of why candidate ECO's were not selected should be included.					
6	GROSS	NAB-EN-MP	2-15	GEN	CRITERIA
If MCA criteria is being followed, it should be reflected in ECO-1 Cost Estimate and LLCID. Refer to subsequent comments.					
7	GROSS	NAB-EN-MP	-	GEN	ECO-1
Escalation rates for FY 1996 and beyond is 3.00%. A differential escalation rate for utilities could possibly be justified based upon local historic data. FY94 escalation rate is not suitable and differs from the 3.00% Any and all inflation, escalation, differential escalation, and inflation factors should be clearly stated. As these would probably be the same for any ECO, could be included along with other criteria on p2-16.					
8	GROSS	NAB-EN-MP	-	GEN	ECO-1
LCCA is given for 20 years. Assumption at p2-15 is 25 years. By TM 5-811-1, a life cycle of 25 years should be used.					
9	GROSS	NAB-EN-MP	-	GEN	ECO-1
Criteria for redundancy is included in TM 5-811-1. A safe assumption for this study is that if no redundant supply exists, none should be included for the ECO. Reliability should not be confused with redundancy, i.e. consideration should be given to construction of two substations for reliability purposes.					

eeap-interim

Num	Name	Office	Page/Sheet	Discipline	Rm/Detail
10	GROSS	NAB-EN-MP	-	GEN	ECO-1
<p>As a recurring cost of \$15,000 is assigned for maintenance of the new electrical system, assumption of recurring savings should be included. Annual O&M cost for the existing system should be available from the Engineering Resource Management Division on a unit cost (or work order) basis. If not, data for DA average cost is available. Assumption seems fitting that O&M cost for a new system will be lower than that for an older, non-standardized system.</p>					
11	GROSS	NAB-EN-MP	-	GEN	ECO-1
<p>Will any factors besides O&M and distribution demand charge have an economic effect (improved system efficiency, reduced transmission loss). If so, would it be possible to justify any recurring savings?</p>					
12	GROSS	NAB-EN-MP	DWG-	GEN	ECO-1
<p>If the transformer is to be Government owned, it should be sited on Government property or need for Real Estate coordination/action referenced in the narrative.</p>					
13	GROSS	NAB-EN-MP	-	GEN	ECO-1
<p>As a note, the transformer/distribution must be constructed so as to support a future UMCS (TM 5-811-1). Though this should be a negligible construction cost, it will have a significant contracting (use of proprietary item) impact.</p>					
14	GROSS	NAB-EN-MP	-	GEN	ECO-1
<p>APG Installation Design Guide (IDG) specifies that utilities will be underground. Project will require coordination with Master Planning. This statement does not mandate underground distribution but allows for underground without receiving waiver required by AR and TM.</p>					

eeap-interim

Num	Name	Office	Page/Sheet	Discipline	Rm/Detail
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15	GROSS	NAB-EN-MP	-	GEN	ECO-1
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Cost Estimate. Definition/clarification should be provided as to what is included under FRINGES, OVERHEAD & PROFIT, CONTINGENCY, SUPERVISION and ENGINEERING as semantics will have impact on cost. Is the estimate for construction cost or project cost. Based upon the assigned percentages I would assume these are project, not construction contract costs.

It is difficult to determine whether OVERHEAD refers to home office, site overhead (trailer, phones, G&A), taxes, overhead on project administration, or all of the above. Project overhead for MCA is normally combined with inspection and supervision (SIOH) at 6.00%. Profit will not exceed 13.00% and a project of this size would typically have about 8.00% profit. CONTINGENCY on a MCA new construction project would be 5.00% and 10.00% for maintenance and repair. Is this CONTINGENCY for uncertainty in cost based upon the level of development? If so, by MCA standards, 5.00% or 10.00% would be used. Separate line for SUPERVISION indicates this is project cost, not estimated construction contract (ECC). What is the 15% ENGINEERING? Public law limits design to 6.00% of the ECC, while design analysis, cost estimation, topo, etc would typically add 2 to 3%. Is bonding cost included for the estimate? Please provide definitions/clarification.

ATTACHMENT 8.13
INTERIM REVIEW RESPONSES

INTERIM REVIEW COMMENTS

DRAFT RESPONSE

ELECTRICAL DEMAND REDUCTION STUDY

at

ABERDEEN PROVING GROUND
Baltimore, Maryland

prepared by

ENTECH ENGINEERING, INC.
4 South Fourth Street
Reading, Pennsylvania 19603

610-373-6667

March 1, 1996

**Interim Review Comments and Responses
Draft Response**

The following addresses the review comments (NAB-EN-MP - Gross) for the Electrical Demand Reduction Study at Aberdeen Proving Ground along with our responses.

Comment	Response
1. Please correct typo's, spelling, capitalization.	1. Work edits will continue until final submission.
2. Schedule for completion of contract should be included.	2. Completion Schedule is as follows: Interim Meeting: 3-4-96 Submission of Pre-Final Report: 6 weeks after interim meeting or receipt of requested data
3. Volume 2 should include correspondence/discussion with BG&E and relevant (not all) contacts/letters with Government personnel.	3. Documentation of BG&E correspondence will be furnished.
4. Selection of candidate ECO's should be noted as being made by APG and the Corps.	4. Agreed.
5. A discussion of why candidate ECO's were not selected should be included.	5. Refer to comment 4 and provide same for inclusion.
6. If MCA criteria is being followed, it should be reflected in ECO-1 Cost Estimate and LLCID. Refer to subsequent comments.	6. MCA criteria is the path selected in prompting the LLCID Program.
7. Escalation rates for FY 1996 and beyond is 3.00%. A differential escalation rate for utilities could possibly be justified based upon local historic data. FY94 escalation rate is not suitable and differs from the 3.00%. Any and all inflation, escalation, differential escalation, and inflation factors should be clearly stated. As these would probably be the same for any ECO, could be included along with other criteria on p2-16.	7. LLCID escalation criteria is used in all ECO's considered.
8. LCCA is given for 20 years. Assumption at p2-15 is 25 years. By TM 5-811-1, a life cycle of 25 years should be used.	8. Twenty-five year LCCA on page 2-15 was incorrect. Twenty year projections are recommended by 10 Jan 94 ECIP Guidance Letter, Appendix B.

Comment	Response
9. Criteria for redundancy is included in TM-5-811-1. A safe assumption for this study is that is no redundant supply exists, none should be included for the ECO. Reliability should not be confused with redundancy, i.e. consideration should be given to construction of two substations for reliability purposes.	9. Although BG&E equipment probably provides redundancy, semantics will be revised so the reliability aspect can be considered independent of TM 5-811-1.
10. As a recurring cost of \$15,000 is assigned for maintenance of the new electrical system, assumption of recurring savings should be included. Annual O&M cost for the existing system should be available from the Engineering Resource Management Division on a unit cost (or work order) basis. If not, data for DA average cost is available. Assumption seems fitting that O&M cost for a new system will be lower than that for an older, non-standardized system.	10. Existing electrical equipment in this ECO is currently maintained by BG&E. New costs were projected from Entech's experience.
11. Will any factors besides O&M and distribution demand charge have an economic effect (improved system efficiency, reduced transmission loss). If so, would it be possible to justify any recurring savings?	11. There are no other recurring savings. Transformation losses have been incorporated.
12. If the transformer is to be Government owned, it should be sited on Government property or need for Real Estate coordination/action referenced in the narrative.	12. Transformer is envisioned to be on property presently owned by the Government.
13. As a note, the transformer/distribution must be constructed so as to support a future UMCS (TM 5-811-1). Though this should be a negligible construction cost, it will have a significant contracting (use of proprietary item) impact.	13. The cost of including provisions for a UMCS system with new construction is less than the cost of retrofitting the existing construction with equivalent components. Therefore, this project will remain mute on the subject, unless such a posture would distort our findings.
14. APG Installation Design Guide (IDG) specifies that utilities will be underground. Project will require coordination with Master Planning. This statement does not mandate underground distribution but allows for underground without receiving waiver required by AR and TM.	14. In absence of a mandate, we will continue to suggest utility locations on the basis of good engineering practice.

Comment	Response
<p>15. Cost Estimate. Definition/clarification should be provided as to what is included under FRINGES, OVERHEAD & PROFIT, CONTINGENCY, SUPERVISION and ENGINEERING as semantics will have impact on cost. Is the estimate for construction cost of project cost. Based upon the assigned percentages I would assume these are project, not construction contract costs. It is difficult to determine whether OVERHEAD refers to home office, site overhead (trailer, phones, G&A), taxes, overhead on project administration, inspection and supervision (SIOH) at 6.00%. Profit will not exceed 13.00% and a project of this size would typically have about 8.00% profit. CONTINGENCY on a MCA new construction project would be 5.00% and 10.00% for maintenance and repair. Is this CONTINGENCY for uncertainty in cost based upon the level of development? If so, by MCA standards, 5.00% or 10.00% would be used. Separate line for SUPERVISION indicates this is project cost, not estimated construction contract (ECC). What is the 15% ENGINEERING? Public law limits design to 6.00% of the ECC, while design bonding cost included for the estimate? Please provide definitions/clarification.</p>	<p>15. Section 2 - Methodology will be supplemented to clarify the cost data.</p>

Interim Review Comments and Responses
Draft Response

The following addresses the review comments (CESAM-EN-DE, Electrical Comments - Wallace) for the Electrical Demand Reduction Study at Aberdeen Proving Ground along with our responses.

Comment	Response
1. The Interim Submission only included the first four sections of Volume 1 and draft discussions on the first two of the seven Energy Conservation Opportunities identified on page 1-2. The AE should assure inclusion of all missing sections and backup information in the Prefinal Submittal. Also, assure inclusion of the proper information into all blank spaces within the document.	1. Prefinal submission will include items requested.
2. Data for Submeters 22 and 23, June through September 1995, page 4-6 is missing. Please provide information.	2. Information cited as missing has not been furnished by Aberdeen Proving Ground.
3. Provide attachments for calculations of incremental cost and monthly electric bills referenced on page 4-7, last line.	3. Incremental cost calculations will be furnished with the pre-final submission.
4. The basis for the potential savings produced by owning and maintaining the 115 kV-34.5 kV transformation is the elimination of the distribution demand charge currently imposed on the 34.5 kV metering. The rate structure supposedly shows this distribution demand charge. The AE should assure that the Prefinal Submittal contains the rate structure information, currently omitted in this submittal. Also, the AE should clearly prove, with the information provided, that elimination of the distribution demand charge materializes with the construction of a new substation.	4. Rate structure to be included in pre-final submittal. Also, the rate structure states: "Transmission Service: For customers served at 115kV and above, the distribution demand charge does not apply."
5. The AE should investigate and discuss any potential incentives offered by Baltimore Gas and Electric Company for reductions in electrical demand. Page 2-2 indicates that information on Incentive Programs has been provided to the AE.	5. Incentive programs are the basis for several ECO's.

Interim Review Comments and Responses
Draft Response

The following addresses the review comments for the Electrical Demand Reduction Study at Aberdeen Proving Ground along with our responses.

Comments		Responses	
1.	Page 2-7, Para 2.4: Provide a copy of the model performance and actual bills.	1.	Copy of the model performance and actual bills will be included with next submission.
2.	Table 4.2.2: Provide the formula being used to calculate the energy cost.	2.	Summary of incremental cost calculations will be furnished with next submission.
3.	General: The study shall be performed for the following options: a. Aberdeen Area fed from existing two 34kV feeders. b. Aberdeen Area fed by changing the two existing 34kV feeders to 115kV. c. Aberdeen Area fed by increasing the capacity of existing 115kV system to 50 MVA.	3.	The work requested seems to be beyond the scope of this study. We understand the comment to request review of changes to the distribution systems capacity, rather than efforts to reduce demand cost.

Interim Review Comments and Responses
Draft Response

The following addresses the review comments (Rexel Gallamoza, Mech/Elec Branch) for the Electrical Demand Reduction Study at Aberdeen Proving Ground along with our responses.

Comments	Responses
1. Study should take into account the upgrade of Substation 18 which will utilize the existing 110 kV sub-transmission line to Building 120. The design will be completed mid-March time frame.	1. Information concerning upgrade of substation has been collected during interviews, considered, and findings documented. Advance copies of our findings were released to APG to aid in their consideration of the proposed project. For Entech to rework their efforts in this area because of changed conditions may be a revision to the agreed upon scope.
2. Substation 18 at Building 120 will be funded with Maintenance and Repair money which is readily available since the existing substation equipment is failing. Per discussion with AMC Construction division personnel, the chances of getting a project through ECIP are very slim. MCA dollars for construction of a new substation between Harford Substation and Substation A is very doubtful in the near future. Explain other alternatives to have project funded.	2. A/E has no control of project funding. We can prepare documentation subject to the guidelines of a particular funding but do not assure its availability. Documentation furnished under this work order is to be formatted per ECIP Guidelines.
3. If the Substation 18 project is completed, then how should the proposed substation project be modified.	3. If substation 18 project, as we understand it, it completed, ECO-2 and 3 should not be considered.
4. The cost for two having transformers must also include relocating Substation B, unless the made underground or the conductors are run back to the station. The preference is to keep the switches in sight.	4. We do not understand the need to relocate substation B. We do concede that the visual connections between substations may not improve over present conditions and conductor routings must still contend with a significant highway but the construction of a new 115-34-5kV substation does not require relocation of either 34-5 switches.

ATTACHMENT 8.14
INTERIM REVIEW MEETING MINUTES

INTERIM REVIEW MEETING MINUTES

PROJECT: Aberdeen Proving Ground
Electrical Demand Reduction Study
Entech #4130.06

MEETING DATE: March 4, 1996
Aberdeen Proving Ground EPSD

MINUTES ISSUE DATE: March 5, 1996

ATTENDEES: Ted Gross, CENAB-EN-MD
Raj Dillon, EPSD (part-time)
Dick Lohr, EPSD/M/E Br (part-time)
Gurcharan Singh, Mech, Elect. Br/EPSD (part-time)
Rex Gallamoza, EPSD/Mech/Elec Br
Gary Testerman, EPSD/Energy Manager
Dwight Haldeman, Entech Engineering Inc.
Jeff Pitzer, Entech Engineering Inc.
Scott Barndt, Entech Engineering Inc.

1. The discussion began with a briefing of the posts current position.
 - a. A separate study is considering the potential of privatizing Aberdeen's electrical distribution system from the Hartford substation to each building. BG&E is assumed to be the vendor. Such a change could revise the rate into a uniquely structured primary account or each "building" as a separate account.
 - b. The proposed construction project at Building 120 has been changed from 115 to 13200 with service to a limited area to 115 to 34-5 with interconnections to handle the loads associated with the present Substation B load. Further upgrades to this substation would permit feeding the entire base from this substation permitting the conductors are adequately sized.

- c. The two issues above were considered with Entech ECO #1 (construction of a primary transformer adjoining BG&E's Harford Substation). EPSD will collect additional information prior to agreeing upon a position.
2. Entech reviewed the comments received about the interim report, presented a response (draft document distributed) and collected the following concerns:
 - a. Most recent LLCID escalation criteria to be used
 - b. Any demand side management programs offered by BG&E to be reviewed
3. Entech reviewed a draft of ECO's 1-16 (draft document distributed) and collected the following comments:
 - a. ECO-1 payback for 2 transformers is 6.6 years
 - b. ECO-6 consider using electronic devices rather than manual labor for start-ups
 - c. ECO-16 consider 4 day weeks with Friday as down time
4. The Corp and Aberdeen made the following decisions:

Recommend

Implementation

ECO-1	ECIP
ECO-4	No cost/low cost
ECO-5	ECIP
ECO-6	No cost/low cost
ECO-9	No cost/low cost

Not recommended

ECO-2	
ECO-3	O&M project by others
ECO-7	Reserve for future consideration
ECO-8	Reserve for future consideration
ECO-10	No payback
ECO-11	Excessive risk
ECO-12	No payback
ECO-13	Reserve for future project
ECO-14	Reserve for future project

Open

ECO-15

ECO-16

The above minutes reflect the writer's interpretation of the meeting events and discussions. Should there be any corrections which are deemed to be required to these minutes, please send a copy of your suggested corrections to the undersigned by March 12, 1996. Receiving no corrections, these minutes shall stand as the meeting record.

Respectfully submitted,

Dwight E. Haldeman
Project Manager

DEH:mjs

ATTACHMENT 8.15
TELEPHONE CONVERSATION MINUTES AND COMMENTS

ENTECH

ENGINEERING, INC.



Telephone and Conference Memorandum

By: Dwight Haldeman
Project No.: 4130.06
Person(s): Ted Gross

Date: April 8, 1996
Phone Code: 066
Representing: BCOE

Title: Masterplanning
Telephone No: SD001
Subject: BGE invoice errors

Fax No.:

NOTES

The invoice errors have been reported to BGE. No resolution to-date. Entech may assume that the invoices were incorrect and will complete the study on that basis.

Record of Telephone Conversation

Date: 3-28-96
Parties Keith Brock - Baltimore Gas and Electric Co.
Dwight Haldeman - Entech Engineering

Discussion:

Requested copies of all the Primary rate riders to assure our records are complete and to confirm that we have full text for the riders under consideration. Confirmed there are no riders for ice storage systems. There are potential opportunities for rebates for ice storage studies.

Requested new tariff sheets . Billing information has been extracted from the bills to-date and we want to confirm our understandings. Portions of Aberdeen-BG&E relationship are subject to a 1950's contract.

Discussed Demand side management programs available from BG&E. Other than the radio controlled cycling of residential air-conditioning equipment, BG&E does not get involved in the active management of demand.

Reviewed understanding of Curtailment rider, option two. Aberdeen has been accepted for consideration into this program. Should Aberdeen construct a 5000kw generator to meet the curtailment specifications listed, they would receive a reduction in the demand rate for the entire year.

Requested copy of BG&E's: *Customer Owned Substation Guidelines*.

Discussed possibilities of getting a copy of OCT 93, OCT 94, and NOV 93 Aberdeen bills. BG&E does not have these bills online but can retrieve from their archives.

ATTACHMENT 8.16
PRE-FINAL REVIEW COMMENTS

95% REVIEW COMMENTS

DEMAND REDUCTION STUDY

at

**ABERDEEN PROVING GROUNDS
Aberdeen, Maryland**

prepared by

**ENTECH ENGINEERING, INC.
4 South Fourth Street
Reading, Pennsylvania 19603**

610.373.6667

Entech #4130.06

**95% Review Comments and Responses to Demand Reduction Study
Aberdeen Proving Grounds, Aberdeen, Maryland**

The following addresses the review comments for the Demand Reduction Study at Aberdeen Proving Grounds. Responses to review comments are organized by Reviewer. All review comments received are attached for your convenience.

Reviewer: Ted Gross CENAB-EN-MP

Date of Review: 22 May 1996

Comment	Response
1. No comments	1. No response required

**95% Review Comments and Responses to Demand Reduction Study
Aberdeen Proving Grounds, Aberdeen, Maryland**

The following addresses the review comments for the Demand Reduction Study at Aberdeen Proving Grounds. Responses to review comments are organized by Reviewer. All review comments received are attached for your convenience.

Reviewer: Wallace/694-4058

Date of Review: 22 May 1996

Comment	Response
1. It appears that lighting retrofits (utilizing T-8 lamps and electronic ballasts) were excluded from the scope of work; page A-4, section 8; as an energy saving opportunity. With 13 million square feet on Post, it should be noted that this energy saving opportunity should be investigated, if not in this study, maybe in another.	1. A/E response not required. However, it is our understanding that considerable lighting retrofits have been undertaken on Post and are expected to continue through a performance contract with the electric utility.
2. It does not appear that power factor correction energy saving opportunities were investigated. Provide explanation.	2. Power factor is not an element of the utility's rate structure. Consequently, there is no financial incentive for the customer to make corrections. In absence of a financial incentive, the Government programs will not fund any corrections.
3. Suggest that sub-section dividers be included within Section 8 to make it easier to find information.	3. Comment noted.

**95% Review Comments and Responses to Demand Reduction Study
Aberdeen Proving Grounds, Aberdeen, Maryland**

The following addresses the review comments for the Demand Reduction Study at Aberdeen Proving Grounds. Responses to review comments are organized by Reviewer. All review comments received are attached for your convenience.

Reviewer: Rex Gallamoza

Date of Review: 5 June 1996

Comment	Response
1. P. 3-1, Par. 3.2, Change " ...US Route 40..." to " ...US Route 715..."	1. Requested change made.
2. P. 5-14, Substation 6 had a bad tap changer during time of demand readings. The substation was de-energize and had its feeders switched over to Substation 9.	2. Paragraph added to the end of Section 5 to reinforce that these conclusions are based on the "snapshot" metering data. References will be made to the status of the substations described in these review comments.
3. P. 5-15, Substation 1 was used to carry the loads from Substations #3, #5, and #13. Substations 13 had some of its load applied from a portable substation. This load transformer was at Substations #5 and #13 were damaged and were not in use. Substation #3 was being rebuilt to supply a 13.2 kV distribution voltage.	3. Paragraph added to the end of Section 5 to reinforce that these conclusions are based on the "snapshot" metering data. References will be made to the status of the substations described in these review comments.
ECO-1 4. The new substation should also include the third feeder that is routed underground from the Harford Substation to the New ARL Facility.	ECO-1 4. The design of the new substation should include the ARL feeder. However, it is counterproductive for this report to include costs for future loads while attempting to demonstrate savings of existing demand.

**95% Review Comments and Responses to Demand Reduction Study
Aberdeen Proving Grounds, Aberdeen, Maryland**

Comment	Response
5. For operations, maintenance, and reliability, the new substation must use a "Breaker and a Half" arrangement. The estimate will need to be modified as well as the one line diagram.	5. The station arrangement proposed is valid. Should the "Breaker and a Half" arrangement be considered more desirable, the "order of magnitude" change to the findings would be: <ul style="list-style-type: none"> • Cost: From \$4,100,000 to \$4,250,000 • Payback: From 7.0 to 7.25 years • SIR: From 1.9 to 1.8
6. Using the station arrangement stated in Comment #6 and the addition of the third feeder mentioned in Comment #4, a spare feeder position will result in the new substation. Again, the estimate will need to be modified as well as the one line diagram.	6. The addition of the third feeder and the request to utilize a "Breaker and a Half" or other deviations to the concept are more appropriately introduced as criteria for a design project rather than supplements to an energy conservation opportunity.
7. The 30 MVA transformers will become a reliability issue and will also affect growth. The transformers should be reasonably sized for continued use the next 20 years and for emergency operations.	7. The transformer is sized based on historical peak load data with 50% spare capacity added.
8. The estimate should include the cost for Baltimore Gas and Electric or a private contractor to operate and maintain the 115 kV equipment, since the DPW will only work on 38 kV equipment.	8. The ECO includes the sum of \$15,000.00 per year for preventive maintenance.
ECO-1A 9. Same comment as before, the estimate should include the cost for Baltimore Gas and Electric or a private contractor to operate and maintain the 115 kV equipment, since the DPW will only work on 38 kV equipment.	ECO-1A 9. The ECO includes the sum of \$15,000.00 per year for preventive maintenance.
10. To improve reliability, what about reserving capacity at the Harford Substation through an agreement with BGE and installing tie lines.	10. The scope of this study does not include participation in the negotiations with BG&E or others. There are many beneficial positions that can be reached as these concepts move towards reality. The reserving capacity suggestion is excellent and should be pursued in discussions with the utility.

**95% Review Comments and Responses to Demand Reduction Study
Aberdeen Proving Grounds, Aberdeen, Maryland**

Comment	Response
ECO-2	ECO-2
11. The title is a deceiving.	11. Comment noted.
12. A dual voltage transformer, 115/13.8/7.9x4.16/2.4 kV, delta-wye, needs to be specified since the planned upgrade for the area is 13.2 kV. Or, the project should be coordinated with the 13.2 kV upgrade. The estimate will need to be adjusted accordingly.	12. We were unaware of the referenced upgrade. The incentive for this ECO is the availability of the existing 115 kV - 4.16 kV transformer. To utilize this existing asset and capture the beneficial rate, it is essential that the 4.16 kV distribution voltage be used. This is the motive for the new conductors to the load side (4.16) of existing Substations #4 and #9. Should the conversations evolve to where replacing the existing transformer is considered, we would argue that ECO-1, 1A, or 3 are more appropriate considerations.
13. To eliminate cost, why even run feeders from Substation 18 to Substations #4 and #9. The lines can be connected on the overhead distribution system. This will also make it easier to convert to 13.2 kV. Reclosers and sectionalizers will need to be implemented if the substations are eliminated but this is cheaper than re-building two substations with metal-clad switchgear.	13. We were unaware of the referenced upgrade. The incentive for this ECO is the availability of the existing 115 kV - 4.16 kV transformer. To utilize this existing asset and capture the beneficial rate, it is essential that the 4.16 kV distribution voltage be used. This is the motive for the new conductors to the load side (4.16) of existing Substations #4 and #9. Should the conversations evolve to where replacing the existing transformer is considered, we would argue that ECO-1, 1A, or 3 are more appropriate considerations.
14. What does the circled "M" represent on the one line diagram?	14. A meter.
ECO-4	ECO-4
15. Do the fuel tanks for the existing generators need to be upgraded to increase capacity?	15. The consumption of fuel oil was estimated at 1280 gal/yr or 107 gal/day or roughly 53 gal/day/generator. We did not confirm the actual size of the tanks but feel quite confident that reasonable capacity exists.

**95% Review Comments and Responses to Demand Reduction Study
Aberdeen Proving Grounds, Aberdeen, Maryland**

Comment	Response
ECO-5 16. Include cost for contractor to operate and maintain equipment.	ECO-5 16. These generators need to be available for service, when determined by BGE, for 10 hours a day; 12 days a year. Provisions for remote, automatic activation have been included in the cost estimate and \$35,000.00 of preventive maintenance is included annually.